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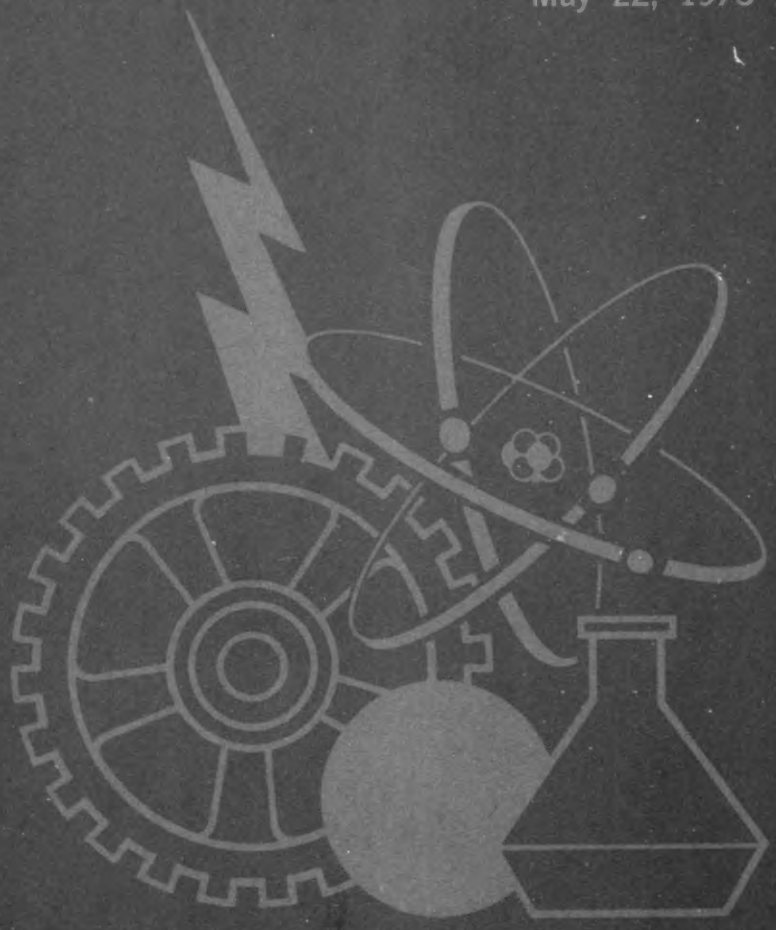

U.S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 22, 1973 Volume 910 Number 4

CONTENTS

	Page
Patents and Trademark Notices	
Examination	992
Registration to Practice	992
Title 37—Interference Practice	992
Patent Suits	993
Patent Notices	
Certificates of Correction for the Week of May 22, 1973	995
Disclaimers	995
Adverse Decisions in Interferences	995
Dedications	995
Government-Owned Inventions	996
Condition of Patent Applications	997
Plant Patents Granted	998
Patents Granted	
General and Mechanical	999
Chemical	1276
Electrical	1337
Design Patents Granted	1444
Index of Patentees	PI 1
Indices of Plants and Designs	PI 50
Classification of	
Patents	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents	PI 57
Designs and Plants	PI 59

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PATENT OFFICE NOTICES

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent Office as patent attorneys or agents will be held on Tuesday, September 11, 1973.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent Office together with a $35 fee not later than July 31, 1973.

Application blanks may be obtained from the Clerk of the Patent Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents, Washington, D.C., 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office, either on the basis of 4 years or more service in the Examining Corps; under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases"; or, having passed the examination for registration to practice before the Patent Office, held on September 12, 1972. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before June 22, 1973.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Baker, John A., Fetherstonhaugh & Co., 70 Gloucester St., Ottawa, Ontario, Canada
Dearing, Dennis A., General Electric Co., 316 E. 9th St., Owensboro, Ky. 42301
Hattan, L. Ruth, Merrell-National Labs., 110 E. Amity Road, Cincinnati, Ohio 45215
Juhl, Nis H., 53 W. Jackson Blvd., Chicago, Ill. 60604
McDonald, C. Douglas, Jr., 1000 Connecticut Ave., Suite 500, Washington, D.C. 20036
Rock, H. Wayne, 100 Sparks St., Rm. 1000, Ottawa, Ontario, Canada
Sussman, Morris, 636 G St. SW., Washington, D.C. 20024

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO FILE APPLICATIONS IN FOREIGN COUNTRIES

Interference Practice

These rules changes are intended to clarify the current practice before the Board of Patent Interferences and to correct several inconsistencies in rule language. The rule change: (1) Provides for a 30-day period in which the junior party may request a final hearing to review a decision granting a motion over his opposition, (2) changes several 10-day periods to be 20-day periods, (3) provides for consideration of a motion to add or remove names of inventors, filed after the time for taking testimony has been set, to be deferred to final hearing, (4) provides that documentary exhibits not be included in bound volumes of testimony, (5) provides that in testimony papers, questions to a witness need not be consecutively numbered if paper with numbered lines is used, and (6) provides that a notice be placed in the file wrapper of a patent if claims therefrom are copied in an application under secrecy order.

On June 30, 1972, notice of proposed rulemaking regarding the amendment of §§ 1.225, 1.231, 1.251, 1.253, 1.272, 1.277, 1.281, and 5.3 of title 37, Code of Federal Regulations, dealing with interference practice, was published in the Federal Register (37 FR 12966). Interested persons were given until October 10, 1972, to submit written comments or suggestions regarding the proposed amendments. The changes in §§ 1.243 and 1.244 are made without publication of proposed rule change since it merely relieves a restriction.

Full consideration having been given to all comments received in response to the public notice, the amendments originally proposed have been somewhat modified and are hereby adopted as set forth below.

Effective date.—These amendments shall become effective June 25, 1973, and shall apply only to interferences declared after such effective date.

In consideration of the comments received and pursuant to the authority contained in section 6 of the act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), parts 1 and 5 of title 37, Code of Federal Regulations are hereby amended as follows:

1. Section 1.225 is revised to read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the prima facie case made by the filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a motion under § 1.231, within the time set for such motions, for some action in the interference or he has opposed a motion under § 1,231(a) (2), (3), (4), or (5). If such a motion has been timely filed but does not result in action in the interference which will remove the basis for a judgment on the record, such judgment on the record will be entered unless the motion related to matters which may be reviewed at final hearing under § 1.258, and within 30 days of the decision disposing of the motion the junior party concerned requests that final hearing be set to review such matter. Also, such a junior party may within such 30-day period request a final hearing to review such a matter raised by his opposition to motion under § 1.231(a) (2), (3), (4), or (5) which was granted over his opposition.

2. In § 1.231, subparagraphs (4) and (5) of paragraph (a) and paragraph (d) are revised to read as follows:

§ 1.231 *Motions before the primary examiner.*

(a) * * *

(4) To be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opposing party in the notice of declaration. See § 1.224.

(5) To amend an involved application by adding or removing the names of one or more inventors as provided in § 1.45. (See par. (d) of this section.)

* * * * * *

(a) All proper motions as specified in paragraph (a) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve will be deferred to final hearing before a Board of Patent Interferences where the motion urges unpatentability of a count to one or more parties which would be reviewable at final hearing under § 1.258(a) and such unpatentability is urged against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such

motion is filed after the times for taking testimony have been set. Requests for reconsideration will not be entertained.

§ 1.243 [*Amended*]

3. In § 1.243, the last sentence is amended by deleting "10 days" and inserting in lieu thereof, the expression "20 days from the date of service of the motion."

§ 1.244 [*Amended*]

4. In § 1.244, paragraph (c) and paragraph (d), last sentence, is amended by deleting "10 days from the filing" and inserting in lieu thereof, the expression "20 days from the date of service."

5. In § 1.251, paragraph (a) is revised to read as follows:

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) A period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

* * * * *

6. In § 1.253, paragraph (f) is revised to read as follows:

§ 1.253 *Copies of the testimony.*

* * * * *

(f) When the copies of the record are in typewritten form, they must be clearly legible on opaque unglazed, durable paper approximately 8½ by 11 inches in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277). The typing shall be on one side of the paper, in not smaller than pica type; and double-spaced with a margin of 1½ inches on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

* * * * *

7. In § 1.272, paragraph (c) is revised to read as follows:

§ 1.272 *Manner of taking testimony of witnesses.*

* * * * *

(c) By agreement of the parties, the testimony of any witness or witnesses of any party may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated. When evidence is submitted in one of these forms, four copies of such affidavit or stipulated testimony (§ 1.253 (a), (c), (f)) are required.

8. In § 1.277, paragraph (a) is revised to read as follows:

§ 1.277 *Form of deposition.*

(a) The testimony must be written on letter size paper, with a wide margin on the left-hand side of the page, and with the writing on one side only of the sheet. The pages must be serially numbered throughout the entire record for each party (§ 1.253(c)) and the name of the witness must be plainly and conspicuously written at the top of each page. The questions propounded to each witness must be consecutively numbered, unless paper with numbered lines is used, and each question must be followed by its answer.

* * * * *

9. Section 1.281 is revised to read as follows:

§ 1.281 *Additional time for taking testimony.*

If either party has proceeded with the taking of testimony on his behalf but is unable to complete his case because of inability to procure the testimony of a witness or witnesses within the time limited and said time has expired, and he desires additional time for such purpose, he must file a motion, accompanied by a statement under oath or in the form of a declaration setting forth specifically the cause of such inability, the name or names of the witness or witnesses, the facts expected to be proved by such witness or witnesses, the steps which have been taken to procure such testimony, and the dates on which efforts have been made to procure it. (See § 1.245 for extensions of time in other situations.)

10. In § 5.3, paragraph (b) is revised to read as follows:

§ 5.3 *Prosecution of application under secrecy order; withholding patent.*

* * * * *

(b) An interference will not be declared involving applications under secrecy order. However, if an application under secrecy order copies claims from an issued patent, a notice of that fact will be placed in the file wrapper of the patent.

* * * * *

Date: April 10, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73-7744; Filed 4-20-73; 8:45 am]

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,714,269, G. R. S. Charles, ORNAMENTAL BEADED NECKLACE; 3,213,507, Christian and Pearson, STUD AND SOCKET FASTENER, filed May 17, 1972, D.C.N.J. (Camden), Doc. C–863–72, *Plasti-Hook, Inc.* v. *Scovill Manufacturing Co.*

2,727,069, J. P. M. Van Waes, PREPARATION OF UREA, filed Nov. 1, 1972, D.C., M.D. La. (New Orleans), Doc. 72–275 CA, *Stamicarbon, N.V.* v. *Borden, Inc.* On Nov. 22, 1972, a voluntary dismissal was filed by plaintiff under the provisions of FRCP 41(c) dismissing this action with prejudice, Dec. 12, 1972.

2,847,313, E. E. Ellies, METHOD OF TREATING FRESH MEATS, filed Nov. 8, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–1094, *Tee-Pak, Inc.* v. *St. Regis Paper Co.* Memorandum opinion and order granting motion of St. Regis Paper Co. for partial summary judgment in C71–446 and declaring claims 5 and 7 of Reissue Patent 24,992 to be void; further entering summary judgment against Tee-Pak in companion infringement suit C71–1094, filed Dec. 22, 1972.

2,858,775, F. D. Marasso, DOUGH HANDLING MACHINE, filed Dec. 27, 1972, D.C., N.D. Ga. (Atlanta), Doc. 17599, *AMF Incorporated* v. *Pak-It Mfg. Co., Inc.*

3,147,878, I. L. Wissmiller, CRYOGENIC STORAGE TANK, filed Dec. 18, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–1351, *Chicago Bridge & Iron Company* v. *Aerojet-General Corporation.*

3,178,820, H. D. Kesling, INTRA-ORAL TOOTH POSITIONER, filed Dec. 21, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–697, *TP Laboratories, Inc.* v. *Professional Positioners, Inc., Gerald W. Huge and Richard Allesee.*

3,196,122, R. M. Evans, CEMENTITIOUS COMPOSITIONS CONTAINING ACRYLIC ESTER POLYMERS, filed Oct. 12, 1967, D.C., N.D. Ohio (Cleveland), Doc. C–67–726, *The Master Mechanics Co.* v. *The Cleveland Marble Mosaic Co.* Order entering judgment for defendant on its counterclaim for declaratory judgment finding patent to be invalid, further order dismissing plaintiff's complaint, Dec. 21, 1972. **Same, filed** Nov. 3, 1967, D.C., N.D. Ohio (Cleveland), Doc. C–67–811, *The Master Mechanics Co.* v. *The Rohm & Haas Co.* Judgment for defendant on its counterclaim for declaratory judgment finding patent to be invalid, Dec. 21, 1972.

3,300,643, R. C. McCall, THERMOLUMINESCENT RADIATION DOSIMETER READOUT APPARATUS USING NITROGEN GAS IN THE READOUT CHAMBER, filed Mar. 24, 1971, D.C., N.D. Ga. (Atlanta), Doc. 14,903, *Isotopes, Inc.* v. *The Harshaw Chemical Company, a division of Kewanee Oil and Joseph J. Piersante.* Settled by parties, Dec. 20, 1972.

3,213,507. (See 2,714,269.)

3,304,127, W. D. Huffaker, MATERIAL HANDLING APPARATUS, filed Dec. 18, 1972, D.C., E.D. Tenn. (Knoxville), Doc. 8114, *Free Flow, Inc. and Billy P. Freeman, formerly doing business as Free Flow Company, and Billy P. Freeman* v. *MaTran Corporation.*

3,319,384, E. T. Berg, CONSTRUCTION FOR EXTRUDED REGLETS, filed Aug. 18, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–874, *Edward T. Berg and Superior Concrete Ac-*

cessories v. *Vari-Seal Corp.* Consent judgment in favor of the plaintiffs; patent valid and has been infringed by the defendant; further order permanently enjoining and restraining defendants, Dec. 21, 1972.

3,400,227, Lear and Auld, COMBINED RADIO AND MAGNETIC TAPE PLAYER; **3,403,868,** W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM; **3,437,762,** Lear and Auld, MULTI-TRACK TAPE CARTRIDGE PLAYER; **3,560,126,** W. P. Lear, MAGNETIC TAPE CARTRIDGE PLAYER SYSTEM, **filed** Apr. 26, 1972, D.C. Del. (Wilmington), Doc. 4370, *Motorola, Inc.* v. *Gates Lear Jet Corporation.* Order, Hon. Caleb M. Wright, Chief Judge, transferred this case pursuant to 28 U.S.C. Section 1404(a) to the United States District Court for the District of Colorado, Nov. 24, 1972.

3,403,868. (See 3,400,227.)

3,437,762. (See 3,400,227.)

3,470,834, A. R. Bone, FASTENER ATTACHING DEVICE; **3,518,729,** F. G. Merser, EYE-SHANK BUTTON ATTACHMENT, **filed** Dec. 4, 1972, D.C., S.D. Ohio (Dayton), Doc. 4329, *Dennison Manufacturing Co.* v. *The Elder-Beerman Stores, Corp.*

3,472,939, Petrocci, Prodo, Shay, and Wakeman, SYNERGISTIC BLENDS OF MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS; **3,525,793,** same MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS CONTAINING SYNERGISTIC BLENDS OF ALKYL GROUPS, **filed** Dec. 2, 1971, D.C.N.J. (Newark), Doc. C-1800-71, *Millmaster Onyx Corporation* v. *Lonza Inc.* Consent order for permanent injunction and for dismissal of first and second counterclaims, Dec. 21, 1972.

3,488,673, S. J. Popell, HAIR CUTTER AND SHAVER; **3,557,449,** same; **D. 215,640,** same, COMBINED HAIR CUTTER AND SHAVER, **filed** Oct. 24, 1969, D.C.N.J. (Trenton), Doc. 1250-69, *Popeil Brothers, Inc.* v. *Nathan K. Morris, doing business as N. K. Morris Mfg. Co. and W. T. Grant Company.* Judgment entered finding patents all invalid, Dec. 29, 1972.

3,493,956, Andrews, Kolesar, Payne and Posner, TRAVELING MESSAGE DISPLAY, **filed** Dec. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3219, *Stewart Warner Corp. and Bunker Ramo Corp.* v. *Ultronic Systems Corp. et al.*

3,518,729. (See 3,470,834.)

3,525,793. (See 3,472,939.)

3,557,449. (See 3,488,673.)

3,560,126. (See 3,400,227.)

3,627,037, R. M. Carr, Jr., FACTORY-ASSEMBLED HEAT EXCHANGER, **filed** Apr. 25, 1972, D.C., N.D. Okla. (Tulsa), Doc. 72-C-141, *Heat/Fluid Engineering Corporation* v. *R & R Engineering Company, Inc.* Plaintiff owner of patent; defendant perpetually enjoined, Dec. 14, 1972.

3,673,410, Waite and Nodine, METHOD OF EXAMINATION OF CELL SAMPLES USING A RADIOACTIVELY TAGGED DYE; **3,678,148,** L. Caiola, ANALYSIS OF RADIOACTIVE SLIDE SPECIMEN AND METHOD OF PREPARATION, **filed** Aug. 4, 1972, D.C.N.J. (Trenton), Doc. C-1341-72, *Isomedics, Incorporated and Information Utilization Corporation* v. *Bio-Digital Sciences, Inc.* Consent order of dismissal without costs, Nov. 21, 1972.

3,678,148. (See 3,673,410.)

3,678,616, Goldfarb, Strader and Strader, DOLL, **filed** Dec. 19, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-3012-CC, *Mattel, Inc.* v. *Sidney L. Lee Co.*

D. 215,640. (See 3,488,673.)

Re. 24,992, E. E. Ellies, METHOD OF TREATING FRESH MEATS, **filed** Apr. 28, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71-446, *St. Regis Paper Company* v. *Tee-Pak, Inc.* Memorandum opinion and order granting motion of St. Regis Paper Co. for partial summary judgment in C71-446 and declaring claims 5 and 7 of Reissue Patent 24,992 to be void; further entering summary judgment against Tee-Pak in companion infringement suit C71-1094, filed Dec. 22, 1972.

Certificates of Correction for the Week of May 22, 1973

P.P. 3,173	3,673,105	3,694,280	3,704,744
P.P. 3,248	3,673,392	3,694,384	3,705,029
Re. 27,386	3,675,256	3,694,512	3,705,710
3,405,517	3,680,625	3,694,787	3,705,754
3,524,738	3,681,113	3,695,498	3,705,853
3,531,338	3,682,044	3,695,545	3,706,356
3,531,493	3,682,892	3,695,847	3,706,415
3,564,307	3,683,066	3,695,893	3,706,612
3,574,747	3,683,201	3,696,000	3,706,677
3,577,410	3,684,799	3,696,044	3,706,685
3,581,172	3,685,009	3,696,122	3,706,693
3,588,216	3,685,635	3,697,118	3,706,704
3,589,725	3,685,656	3,697,380	3,706,714
3,602,886	3,685,796	3,697,948	3,706,892
3,602,887	3,685,953	3,699,017	3,706,900
3,607,272	3,686,237	3,699,065	3,706,944
3,607,939	3,686,362	3,699,103	3,707,060
3,617,288	3,687,325	3,699,475	3,707,122
3,622,788	3,687,665	3,699,696	3,707,183
3,624,450	3,687,734	3,700,285	3,707,255
3,627,385	3,687,900	3,700,373	3,707,464
3,627,716	3,688,227	3,700,422	3,707,775
3,629,589	3,688,540	3,700,461	3,707,862
3,631,488	3,688,668	3,700,804	3,708,027
3,632,021	3,688,788	3,700,851	3,708,092
3,632,545	3,689,107	3,701,936	3,708,387
3,633,013	3,689,555	3,702,145	3,708,509
3,633,781	3,689,576	3,702,254	3,708,580
3,634,167	3,689,783	3,702,261	3,708,620
3,638,684	3,690,266	3,702,590	3,709,034
3,641,993	3,690,782	3,702,827	3,709,320
3,642,806	3,690,883	3,702,886	3,709,517
3,654,241	3,692,406	3,703,437	3,709,758
3,655,832	3,692,408	3,703,670	3,709,866
3,660,375	3,692,453	3,703,687	3,709,948
3,663,124	3,692,712	3,703,774	3,710,453
3,663,685	3,693,389	3,704,138	3,710,781
3,666,097	3,693,584	3,704,144	3,710,930
3,667,355	3,693,661	3,704,146	3,711,275
3,668,165	3,694,058	3,704,163	3,711,372
3,669,953	3,694,195	3,704,350	3,711,416
3,671,192	3,694,245	3,704,518	3,711,669
3,672,877	3,694,273	3,704,643	

Disclaimers

3,543,720.—*Roger A. Drexler* and *Conrad Altmann*, Rochester, N.Y. APPARATUS FOR DEVELOPMENT OF ELECTROSTATIC IMAGES. Patent dated Dec. 1, 1970. Disclaimer filed Jan. 23, 1973, by the assignee, *Eastman Kodak Company*.

Hereby enters this disclaimer to claims 1 through 13 of said patent.

3,640,652.—*John R. Mattox* and *Thomas W. Mattox*, Charlotte, N.C. LOCKING DEVICE FOR TIRE RETREADING MOLD. Patent dated Feb. 8, 1972. Disclaimer filed Aug. 25, 1971, by the inventors.

Hereby disclaim the portion of the term of the patent subsequent to June 23, 1987.

3,640,735.—*Seymour Oppenheimer, Chicago*, and *Albin F. Turbak*, Danville, Ill. FIBROUS REINFORCED POLYVINYL ALCOHOL CASINGS. Patent dated Feb. 8, 1972. Disclaimer filed Mar. 23, 1973, by the assignee, *Tee-Pak, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 21, 1988.

3,643,466.—*Edward W. Bottum*, Brighton, Mich. REFRIGERATION SUCTION ACCUMULATOR. Patent dated Feb. 22, 1972. Disclaimer filed Aug. 16, 1971, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 16, 1988.

3,646,168.—*Robert E. Barrett*, Baton Rouge, La. OIL AND OZONE RESISTANT ELASTOMER BLENDS COMPRISING EPDM RUBBER. Patent dated Feb. 29, 1972. Disclaimer filed Aug. 12, 1971, by the inventor and the assignee, *Copolymer Rubber & Chemical Corporation*.

Hereby disclaim the portion of the term of the patent subsequent to Jan. 27, 1987.

3,646,169.—*Kenneth H. Wirth*, Baton Rouge, La. SULFUR VULCANIZABLE ELASTOMERIC BLENDS COMPRISING DIOLEFIN RUBBER AND EPDM TERPOLYMERS. Patent dated Feb. 29, 1972. Disclaimer filed Aug. 12, 1971, by the inventor and the assignee, *Copolymer Rubber & Chemical Corporation*.

Hereby disclaim the portion of the term of the patent subsequent to Jan. 27, 1987.

3,663,536.—*William J. Houlihan*, Mountain Lakes, N.J. 1,5-DIAZACYCLONONANES. Patent dated May 16, 1971. Disclaimer filed Aug. 12, 1971, by the assignee, *Sandoz-Wander, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 28, 1987.

3,704,123.—*Katsuo Makino* and *Iwa Sawato*, Minami-Ashigara Machi, Japan. DYE SENSITIZED PHOTOCONDUCTIVE MATERIAL. Patent dated Nov. 28, 1972. Disclaimer filed May 12, 1972, by the assignee, *Fuji Photo Film Co., Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 10, 1987.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,382,285, R. R. Egan and L. D. Smiens, LIQUID NONIONIC POLYOXYALKYLENE SURFACE-ACTIVE MATERIALS, decided Mar. 7, 1972, Interference No. 96,880, claim 1.

Patent No. 3,428,471, J. D. Tuthill, N. Kulka and B. S. Arban, METHOD FOR THE MANUFACTURE OF EMBOSSED VINYL FLOOR COVERINGS AND PRODUCTS OBTAINED THEREBY, decided Dec. 15, 1972, Interference No. 96,844, claims 1–4, 6, 7, and 9.

Patent No. 3,469,155, H. W. Van Beek, PUNCH-THROUGH MEANS INTEGRATED WITH MOS TYPE DEVICES FOR PROTECTION AGAINST INSULATION LAYER BREAKDOWN, decided Dec. 29, 1972, Interference No. 97,388, claims 1–8.

Patent No. 3,486,905, E. B. Hotelling, STABILIZED CHOCOLATE BEVERAGES, decided Jan. 2, 1973, Interference No. 97,986, claims 1, 2 and 5.

Dedications

2,796,376.—*Oren F. Williams*, South Charleston, W. Va., *Oscar H. Johnson*, Westport, Conn. and *Jack R. Graham*, St. Albans, W. Va. ALKYLENEBISDITHIOCARBAMATES, FUNGICIDAL COMPOSITION CONTAINING SAME AND METHOD OF APPLYING. Patent dated June 18, 1957. Dedication filed Dec. 11, 1972, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

3,594,703.—*Clyde Norman Holtzapple*, Duncannon, Pa. ELECTRICAL TAPOFF CONNECTOR. Patent dated July 20, 1971. Dedication filed Jan. 9, 1973, by the assignee, *AMP Incorporated*.

Hereby dedicates to the Public all the claims 1–24 for the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

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Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent-application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C., 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA, Code GP–2, Washington, D.C. 20546

Patent application 326,198. Apparatus for Microbiological Sampling. Filed Jan. 24, 1973. PC $3/MF $0.95.

Patent 3,710,257. Multichannel Telemetry System. Filed Mar. 17, 1971. Patented Jan. 9, 1973. Not available NTIS.

Patent application 315,069. Ultra-Stable Oscillator. Filed Dec. 14, 1972. PC $3/MF $0.95.

Patent 3,710,261. Data-Aided Carrier Tracking Loops. Filed Dec. 24, 1970. Patented Jan. 9, 1973. Not available NTIS.

Patent 3,710,329. Phase Control Circuits Using Frequency Multiplications for Phased Array Antennas. Filed July 16, 1970. Patented Jan. 9, 1973. Not available NTIS.

Patent 3,708,671. System for Indicating Direction of Intruder Aircraft. Filed Mar. 16, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,710,122. Laser Communication System for Controlling Several Functions at a Location Remote to the Laser. Filed Apr. 24, 1970. Patented Jan. 9, 1973. Not available NTIS.

Patent 3,711,728. Solid State Double-Pole Double-Throw Relay. Filed Aug. 19, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,708,359. Hydrazinium Nitroformate Propellants With Saturated Polymeric Hydrocarbon Binder. Filed Sept. 23, 1970. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,695,101. Lift Balancing Device. Filed Sept. 8, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,833. Observation Window for a Gas Confining Chamber. Filed Dec. 21, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,021. Geysering Inhibitor for Vertical Cryogenic Transfer Pipe. Filed Dec. 31, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,700,575. Method of Forming Transparent Films of ZoN. Filed Nov. 26, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,697,630. Bonding or Repairing Process. Filed Aug. 23, 1967. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,700,291. Two Degree Inverted Flexure. Filed Oct. 29, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,869. Pseudonoise Sequence Generators With Three Tap Linear Feedback Shift Registers. Filed Dec. 4, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,697,733. High Speed Direct Binary to Binary Coded Decimal Converter and Scaler. Filed Dec. 16, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,950. Versatile Arithmetic Unit for High Speed Sequential Decoder. Filed Feb. 22, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,418. Altitude Measuring System. Filed Sept. 14, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,700,812. Audio System With Means for Reducing Noise Effects. Filed Mar. 11, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,631. Nondestructive Spot Test Method for Titanium and Titanium Alloys. Filed Apr. 21, 1971. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,700,538. Polyimide Resin-Fiberglass Cloth Laminates for Painted Circuit Boards. Filed Sept. 10, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,193. A Method of Delivering a Vehicle to Earth Orbit and Returning the Reusable Portion Thereof to Earth. Filed Jan. 14, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,893. Method and Apparatus for Determining the Contents of Contained Gas Samples. Filed Feb. 12, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,897. Infrared Detectors. Filed Feb. 5, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,334. Interferometer-Polarimeter. Filed Nov. 13, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,503. Irradiance Measuring Device. Filed June 9, 1971. Patented Oct. 24, 1972. Not available NTIS.

[FR Doc. 73–7853; Filed 4–24–73; 8:45 am]

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 1, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-27-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-03-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-20-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-01-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-10-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-05-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-05-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-07-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavatin ; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-29-72

Expiration of patents: The patents within the range of numbers indicated below expire during May 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,743,442 to 2,748,387, inclusive
Plant Patents..... Numbers 1,472 to 1,480, inclusive

PLANT PATENTS

GRANTED MAY 22, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,338
AZALEA PLANT

Hubert B. Lewis and Helen H. Lewis, both of 16562 E. Leffingwell Road, Whittier, Calif. 90603

Filed Dec. 11, 1970, Ser. No. 97,399
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a superior habit of growth, good flower size, a flower form very similar to the flowers of the azalea variety known as "Pink Enchantress" (Plant Patent No. 2,310), a distinctive, attractive and bright Phlox Pink basic flower color with shadings ranging from a pale blush to white, and excellent suitability for year around forcing.

3,339
PIERIS JAPONICA

Paul R. Bosley, 9579 Mentor Ave., Mentor, Ohio 44060

Filed Apr. 26, 1971, Ser. No. 137,720
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

1. The new and distinct variety of *Pieris japonica* plant, substantially as herein described, characterized particularly by its ability to stay green under adverse conditions and not winter burn as *Pieris japonica* will often do, and having a glossier and wavy foliage than other known *Pieris japonica.*

3,340
ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed May 5, 1971, Ser. No. 140,543
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—19 1 Claim

A hybrid tea rose plant which bears average to large size purplish pink blooms on rather strong moderately long stems. Most stems bear a single bloom, though some may bear four or five in an irregular cluster. The plant foliage is abundant, with moderately large leathery but not glossy leaves and longer-than-average peduncles: somewhat better than average resistance to mildew. The buds are quite long, either pointed or urn-shaped, and open into blooms which comprise quite broad petals, especially towards the center. Fragrance: moderately strong tea rose.

3,341
CARNATION PLANT

Vincent P. Quinn, 1235 S. Irving St., Denver, Colo. 80219

Filed June 21, 1971, Ser. No. 155,365
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—70 1 Claim

1. The new and distinct variety of carnation plant, substantially as herein described and illustrated.

3,342
PEACH TREE

Wilfred A. Pratt, Wenatchee, Wash. 98801

Filed June 28, 1971, Ser. No. 157,697
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 1 Claim

A mutant of the Red Haven peach tree, with fruit similar in appearance and time of ripening to Early Red Haven (Plant Patent 2,343) but characterized in the greater firmness and longer storage life of its fruit than that of Early Red Haven.

3,343
CHRYSANTHEMUM PLANT

Yoshio Nishimoto, Mountain View, Calif., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoshio Nishimoto, Mountain View, Calif.

Filed Sept. 14, 1971, Ser. No. 180,531
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Fuji Mefo by its light yellow flower color, approximately ½" larger flowers, and by its petal tubes which are narrower in diameter thereby providing a more delicate appearance.

PATENTS

GRANTED MAY 22, 1973

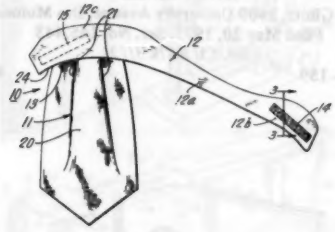
GENERAL AND MECHANICAL

3,733,614

OPEN COLLAR NECKTIE

Lorne Abramowitz, Westmount, Quebec, Canada, assignor to Abbey Incorporated, Montreal, Quebec, Canada

Filed Jan. 10, 1972, Ser. No. 216,570
Int. Cl. A41d *25/00*
U.S. Cl. 2—144 **7 Claims**



An article of neckwear comprising a neckband having a display side and a reverse side for engaging the wearer's neck and opposed upper and lower margins and opposed ends for connection together. The neckband is provided with a frontal portion and a neck encircling portion extending angularly therefrom in the direction of the upper margin whereby the frontal portion rests on the lower part of the neck when worn. A bib having a display side and a reverse side and an upper margin is connected to the neckband. More specifically, the upper margin of the bib is connected to the upper margin of the frontal portion of the neckband so that the bib when worn rests on the lower part of the neckband and depends over the neckband from the upper margin thereof and the display side of both the bib and neckband face outwardly.

3,733,615

INSERTABLE SKI CUFF FOR STRETCH PANTS

Wilton Jaffee, Lambertville, N.J., assignor to H. Freeman & Son, Inc., Philadelphia, Pa.

Filed July 13, 1971, Ser. No. 162,210
Int. Cl. A41d *1/08*
U.S. Cl. 2—232 **5 Claims**

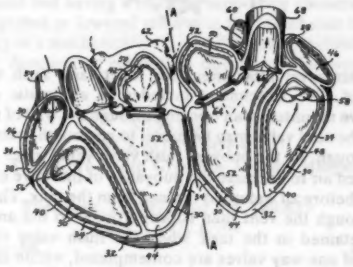
A form of skiing and sports apparel, having an insertable cuff piece attachable inside each leg portion of a pair of vertical stretch pants, the cuff piece extending from approximately two inches above the bottom edge downward and out of the leg of the trouser and over the user's ski boot, having a pair of elastic bands designed to firmly hold the cuff piece onto the ski boot. The cuff piece is attached to the inside of the trousers by a pair of Velcro type fasteners, and may be easily removed so that the pants may be worn without the insertable cuff pieces in normal non-skiing wear.

3,733,616

ELECTROMAGNETICALLY ACTUATED ARTIFICIAL HEART

Frederick Gordon Willis, Jr., Belmont, Mass., assignor to Richard J. Birch, Wellesley, Mass., a part interest

Filed May 3, 1971, Ser. No. 139,701
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **8 Claims**



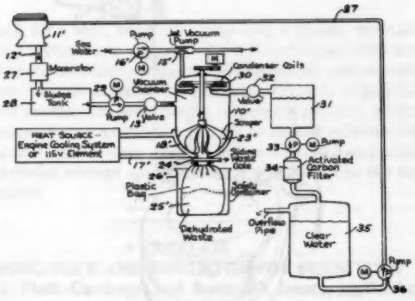
An artificial heart pump which utilizes a plurality of electromagnets to alternately repel and attract a corresponding plurality of permanent magnets mounted on two flexible membranes each of which forms one of the heart's two ventricle chambers.

3,733,617

DISPOSAL SYSTEM FOR HUMAN WASTE

Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed July 23, 1971, Ser. No. 165,643
Int. Cl. E03d *1/00, 3/00, 5/00*
U.S. Cl. 4—10 **26 Claims**



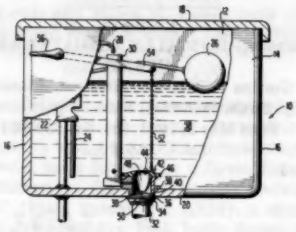
Apparatus for handling human waste wherein the human waste is delivered to a vessel and heat is applied to the vessel,

preferably simultaneously with the application of vacuum, to vaporize the liquid component of the waste material leaving dehydrated waste which can be readily removed.

3,733,618
WATER SAVER ATTACHMENT FOR TOILET TANK FLUSH VALVE

William A. Wiegand, 2440 East Commercial Boulevard, Fort Lauderdale, Fla.

Filed Jan. 4, 1972, Ser. No. 215,361
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 R **23 Claims**

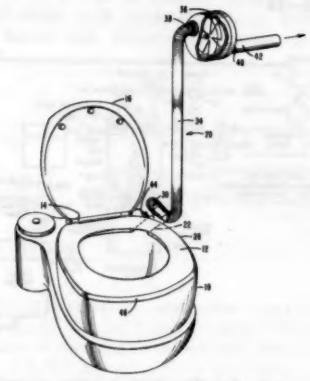


A water saver attachment for toilet tank flush valves is presented. The attachment includes an automatic one-way vent valve mounted in an opening through the wall of the flush valve. The vent valve may be preset to control the rate of flow therethrough. As the buoyant flush valve vents water replaces the vented air to decrease the buoyancy of the valve causing it to close before all water has drained from the tank. The rate of flow through the vent then is proportional to the amount of water retained in the tank when the flush valve closes. A variety of one-way valves are contemplated, within the scope of this invention, however, in a preferred embodiment, a ball check or stem check valve is utilized. A kit is also disclosed including a vent valve and a punch for making the valve-receiving opening in a conventional flush valve. Flush valves are also described wherein the vent valve is molded therein.

3,733,619
VENTILATED TOILET

Forrest D. Smith, P.O. Box 222, Orleans, Calif.

Filed Jan. 3, 1972, Ser. No. 214,669
Int. Cl. E03d *9/04, 11/02, 11/18*
U.S. Cl. 4—72 **7 Claims**

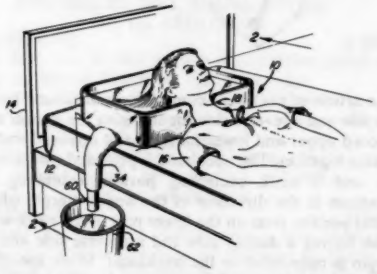


A conventional toilet stool to which is hinged a seat that seals in the down position with the upper rim of the toilet stool. An exhaust vent extending through the toilet seat from the inner lower edge to the outer edge. A flexible hose is detachably connected to the discharge side of the vent. The other end of the flexible hose is connected to the intake side of an exhaust fan. The exhaust fan discharges directly or through a second flexible hose to some exterior location.

3,733,620
COLLAPSIBLE BED SHAMPOO BASIN WITH THROW AWAY LINER

Georgia E. Glintz, 2909 University Avenue, Des Moines, Iowa

Filed May 20, 1971, Ser. No. 145,443
Int. Cl. A47k *3/12*
U.S. Cl. 4—159 **4 Claims**



An upwardly opening tray of generally rectangular configuration and including a bottom wall inclined toward one side of the tray. The side of the tray toward which the bottom wall is inclined is provided with an outlet neck into which fluids within the tray may readily drain by gravity and a liner of the throw away type and constructed of flexible material is provided. The liner is of the same plan shape as the tray so as to be seatingly receivable therein and also provided with a somewhat smaller diameter outlet neck which may be telescoped down into the outlet neck of the tray. In addition, the liner includes side wall portions of greater vertical extend which project above the side walls of the tray and may be folded outwardly and downwardly over the outer surfaces of the side walls of the tray.

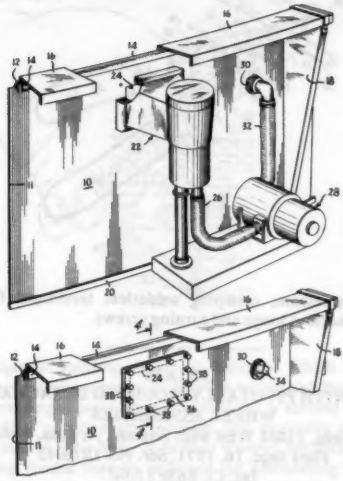
3,733,621
WINTERIZING COVER FOR ABOVE-THE-GROUND SWIMMING POOL SKIMMER OPENING

Frank Jannuzzi, Jr., 239 Maple Avenue, North Plainfield, N.J.

Filed Apr. 2, 1971, Ser. No. 130,679
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **4 Claims**

A winterizing cover for the skimmer opening in the wall of an above-the-ground swimming pool is flat and plate-like in shape and dimensioned to overlap and engage the pool wall around the periphery of the opening. A plurality of bosses formed integrally with the cover project from the outer face of the overlapping portion of the cover, and an equal number of holes, corresponding with holes in the pool wall around the

periphery of the opening, extend from the inner face of the cover into the bosses so that the holes extend beyond the



thickness of the cover without penetrating the outer face so that a leak proof cover is provided that can be securely fastened to the pool wall.

3,733,622

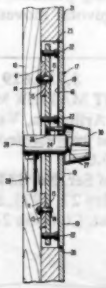
ACCESS PANEL FOR PLUMBING FITTINGS

John W. Searles, 107 Springdale Circle, Thomasville, Ga.

Filed Jan. 13, 1972, Ser. No. 217,476

Int. Cl. E03c *1/00*; F16l *5/00*

U.S. Cl. 4—191 **8 Claims**



A supporting frame for an access panel covering bath or shower fittings includes horizontal bars which are fixed directly to wall studs. Vertical bars are mounted for lateral adjustment on the horizontal bars to accommodate various center distances found in plumbing fittings. The access panel proper attaches to the frame in such a manner that it may be adjusted into flush relationship with tiled or painted walls of varying thicknesses.

3,733,623

HOSPITAL BEDS

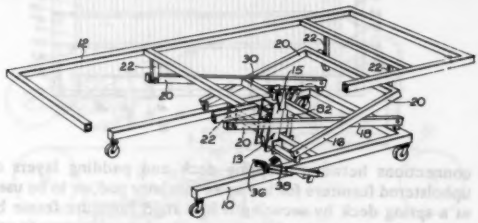
John Mervyn Croxton, Birmingham, England, assignor to J. Nesbit-Evans & Company Limited, Wednesbury, Stafford County, England

Filed Nov. 17, 1971, Ser. No. 199,411

Claims priority, application Great Britain, Nov. 24, 1970, 55,709/70

Int. Cl. A61g *7/00*, *7/10*

U.S. Cl. 5—63 **5 Claims**



A hospital bed having a mattress supporting element which can be elevated or lowered relative to the bed chassis through the agency of a mechanical jack is additionally provided with a hydraulic damper for controlling descent of the supporting element.

3,733,624

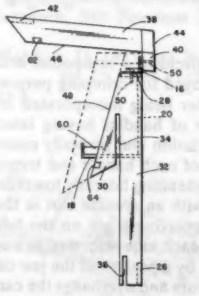
BACK FOR A SOFA

Sidney A. Trabin, 14 North Granville Avenue, Margate City, N.J.

Filed Sept. 15, 1971, Ser. No. 180,637

Int. Cl. A47c *17/04*

U.S. Cl. 5—58 **1 Claim**



A back for a sofa, the back comprising a frame, the frame including a stationary segment and a movable segment connected to the stationary segment. The stationary and movable segments include respective abutments mutually engageable with one another for maintaining respective portions of both the stationary and movable segments in spaced relation with one another and between which portions is defined an accessible concealed storage space in which accessories to the sofa are storable.

3,733,625

SPRING DECK AND INSULATOR FOR FURNITURE

John G. Platt, Carthage, and Robert O. Isaacs, Joplin, both of Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

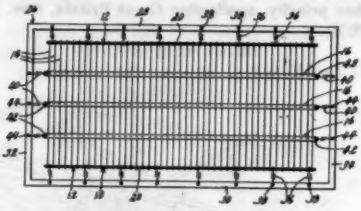
Filed Aug. 5, 1971, Ser. No. 169,279

Int. Cl. A47c *27/22*

U.S. Cl. 5—354 **10 Claims**

A spring deck and insulator for furniture consisting of a planar sheet having a continuous series of closely spaced

parallel cross wires connected at their ends to flexible side strands and a series of flexible straps extending parallel to and spaced intermediate the side strands, each strap being secured to each of the cross wires at its point of intersection therewith, the sheet being adapted to be inserted with or without edge



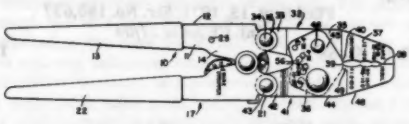
connections between a spring deck and padding layers of upholstered furniture for use as an insulator pad, or to be used as a spring deck by securing it in a rigid furniture frame by resilient fasteners extending from each of the side strands and from each end of each of the straps, to the frame.

3,733,626

COMPOUND ACTION TOOL WITH WIRE STRIPPER AND BOLT CUTTER

Irving Allen, Westbrook, Conn., assignor to Sargent and Company, New Haven, Conn.

Filed Sept. 21, 1971, Ser. No. 182,446
Int. Cl. H02g *1/12*; B25b *7/22*
U.S. Cl. 7—5.3 **5 Claims**



This specification discloses a compound action tool of the type commonly employed for crimping purposes with a wire stripper and bolt cutter being incorporated in the tool. The tool comprises a pair of handles having laterally extending ears in overlapping relation and pivotally connected. An arm is pivoted to the end of each handle and terminates in a jaw. Each arm has a lobe extending laterally towards the other arm. Each arm is formed with an arcuate slot in the region of the lobe with each slot receiving a pin on the lobe of the other arm. The end edge of each lobe is formed as a curved cam surface which is engaged by a portion of the jaw on the other arm which projects therefrom and overhangs the cam surface.

A pair of plates having end portions formed as wire stripping jaws are pivotally mounted on the pivot which connects the handles. One of these plates is fixed to one handle and the other is adjustable on the other handle. An adjusting disc is pivoted on the latter handle and is connected to the adjustable plate by a pin and slot connection. A spring ratchet cooperates with the disc to secure an adjusted position of the stripping jaw controlled thereby. The arms are deformed in the regions of the lobes to provide a sliding face to face engagement of the latter. Each arm and the lobe thereon is formed with a series of openings for bolt cutting purposes.

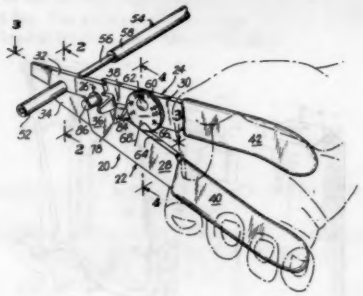
3,733,627

ELECTRICIAN'S COMBINATION TOOL

Harry Epstein, Seaford, N.Y., assignor to Kastar, Inc., Bellport, N.Y.

Filed May 20, 1971, Ser. No. 145,345
Int. Cl. H02g *1/12*
U.S. Cl. 7—5.4 **10 Claims**

Combination tool of particular utility to electricians or other craftsmen, handymen, mechanics or the like, for performing any of a plurality of operations involved in terminating electrical wires including cutting of wires, stripping of in-



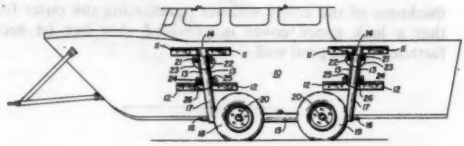
sulation therefrom, crimping solderless terminals, forming screw connection loops and turning screws.

3,733,628

BOAT WITH PIVOTALLY MOUNTED DETACHABLE WHEEL ASSEMBLIES

Jim D. Helbig, 11484 West 68th Avenue, Arvada, Colo.

Filed Sept. 16, 1971, Ser. No. 181,043
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **8 Claims**



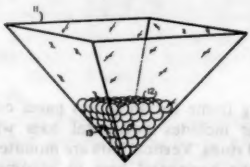
A boat provided with a two-wheel assembly pivotally and detachably fastened to each side of the boat for supporting the boat in substantially horizontal position on land, without other supporting means, for cooperating in transportation of the boat on land and for launching the boat. The two wheels of each assembly are rotatably mounted in tandem fashion on a single frame pivotally mounted on the boat, and each assembly includes locking means for maintaining the wheeled frame in boat supporting position, the locking means being removable to permit pivotal movement and removal of the wheel assembly.

3,733,629

BUOYANT MATRIX MATERIALS

Laurent A. Beaubien, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 884,526, Dec. 12, 1969. This application May 27, 1971, Ser. No. 147,692
Int. Cl. B63b *21/00*
U.S. Cl. 9—8 R **3 Claims**



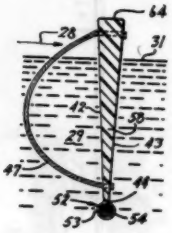
A matrix material for a buoyant composite structure formed with spheres of buoyant material.

3,733,630

AQUATIC SPORTING DEVICE

Richard O. Bagley, 1610 Milvia, Berkeley, Calif.

Filed Apr. 16, 1971, Ser. No. 134,760
Int. Cl. A63b 31/06
U.S. Cl. 9—311 3 Claims



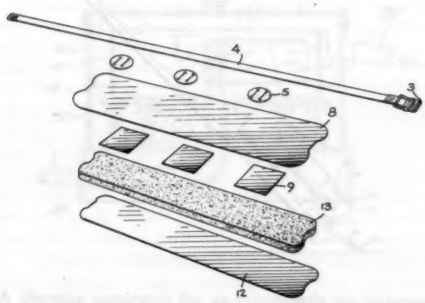
An aquatic sporting device is disclosed which includes a body formed of a density to float in water and having a first side providing a wave engaging surface, a second oppositely facing side, a connecting portion and manually engageable handle means. The body is further formed for securement of weighting means thereto adjacent the connecting portion to cause body to float in a stable position with the connecting portion extending downwardly below the top surface of the water and the wave engaging surface oriented transverse to the top surface of the water. The body is preferably formed with a V-shaped end cross-section and is weighted to float with at least the majority, and preferably about 80 percent, of the wave engaging surface below the top surface of the water. The body of the device may be formed of a foamed material or be pneumatically inflated. Weighting may be accomplished by the use of granular weighting materials such as sand.

3,733,631

REINFORCED STRAP HOLDER

H. Marvin Cohn, 31-74 Monterrey Drive, Merrick, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,198
Int. Cl. B63c 9/10
U.S. Cl. 9—340 10 Claims



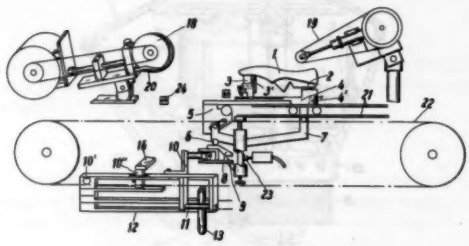
A reinforced water ski belt strap holder comprised of heat sealed nylon impregnated material on two sides of the protective covering of the ski belt provides an economical and sturdy means for securing a strap to a ski belt. Other forms of life preservers such as life jackets or bouyant seat cushions having a heat sealable material coating can be adapted to utilize the improved strap holder.

3,733,632

ROUGHENING MACHINE FOR LASTED UPPERS

Johann Bechtold, Oberursel, Germany, assignor to Maschinenfabrik Moenus Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 19, 1972, Ser. No. 255,052
Claims priority, application Germany, May 22, 1971, P 21 25 485.3
Int. Cl. A43d 00/00
U.S. Cl. 12—1 R 8 Claims



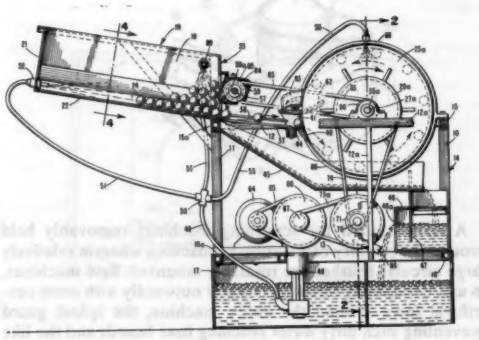
The marginal portion of an upper is roughened by rotary brushes while the upper is transported by a carriage having a heel support, and a toe support mounted on an adjustable slide. Adjustment to different sizes of the uppers is carried out by sensing a three dimensional cam which preferably has two parallel cam discs which are both sensed by bridging rollers whose positions are sensed by feeler rollers. The rotary brushes are adjusted in accordance with the positions of the sensing rollers.

3,733,633

BALL CLEANING APPARATUS

August W. Gustafson, 350 Pasadena Place, Corpus Christi, Tex.

Filed Nov. 23, 1971, Ser. No. 201,512
Int. Cl. A63b 47/04
U.S. Cl. 15—21 A 4 Claims



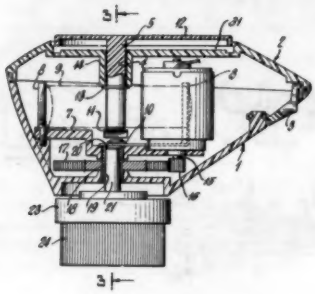
An apparatus for cleaning golf balls and the like combines a pair of cleansing brushes rotatable in opposite directions at different speeds with a means for placing the balls one after the other between the rotating brushes which includes a hopper having a rotatable drum to prevent bridging of balls therein and an open runway between the hopper and brushes having a means which deflects the ball entering the space between the brushes more firmly against the faster rotating brush than the other to avoid rejection of the ball by the oppositely rotating brushes.

3,733,634

ELECTRIC SKIN HYGIENE BRUSH

Alvin Victor Golbe, Englewood, N.J., assignor to Clairol Incorporated, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,414
Int. Cl. A46b 13/02
U.S. Cl. 15—28 5 Claims



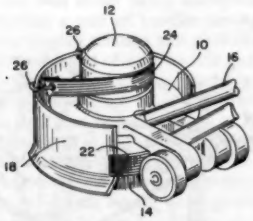
A skin cleansing brush including a housing with a battery powered motor mounted therein rotating a tubular drive shaft which removably receives the stem of a brush having soft bristles for engaging the skin of a user. The housing has a configuration to be gripped by a single hand of a user, and an actuator button is disposed on a broad end of the housing to facilitate actuation of the brush.

3,733,635

SPLASH GUARD FOR SCRUBBING MACHINES

Charles A. Carden, 6332 West 26th Street, Berwyn, Ill.

Filed Aug. 30, 1971, Ser. No. 176,002
Int. Cl. A47l 11/162
U.S. Cl. 15—49 R 2 Claims



A splash guard for scrubbing machines removably held around the perifery of a scrubbing machine wherein relatively large circular brushes are rotatably mounted. Said machines, in use, continually throw dirty water outwardly with some centrifugal force around the entire machine, the splash guard preventing such dirty water reaching base boards and the like when the machine is maneuvered closely thereto.

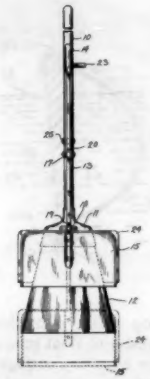
3,733,636

COMBINATION BROOM SHOVEL, AND SCRAPER

Paul Osadsky, Racine, Wis., assignor to Dawn E. Kawa, Racine, Wis.

Filed Apr. 15, 1971, Ser. No. 134,361
Int. Cl. E01h 5/02; A47l 13/00
U.S. Cl. 15—111 5 Claims

A combination implement including a broom, a shovel mounted on one side of said broom adapted to be shifted from a raised, inoperative position to a lowered, operative position projecting below the broom head, and a scraper mounted on the opposite side of said broom adapted to be shifted from a raised position to a lowered position projecting below said broom, said shovel and scraper forming rigid elements when in their raised, inoperative positions preventing the broom bristles from bending too far and breaking during use, thereby promoting the useful life of said broom.

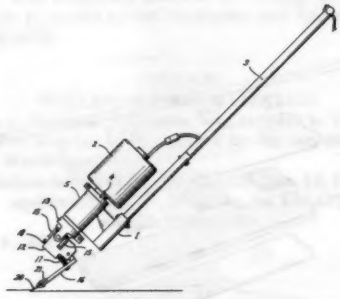


3,733,637

FLOOR SCRAPER

Anthony F. Becker, 6130 Cavalier, Houston, Tex.

Filed June 7, 1971, Ser. No. 150,443
Int. Cl. A47l 11/12
U.S. Cl. 15—93 R 3 Claims



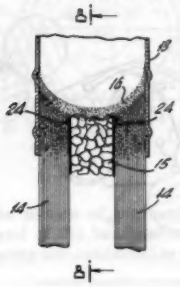
A floor scraper for removing tile, grease and other debris from a floor surface, having a framework, a motor mounted on said framework and an eccentric cam rotated by said motor, a blade holder mounted pivotally on said framework and bearing against said cam, means for constantly urging said blade holder into contact with said cam to apply a forwardlyexerted thrust to said blade.

3,733,638

PAINT BRUSH CONSTRUCTION

Ronald M. Kaplan, Cedar Grove, N.J., assignor to H & G Industries, Inc., Belleville, N.J.

Filed May 24, 1971, Ser. No. 146,336
Int. Cl. A46b 3/02, 3/02
U.S. Cl. 15—193 6 Claims



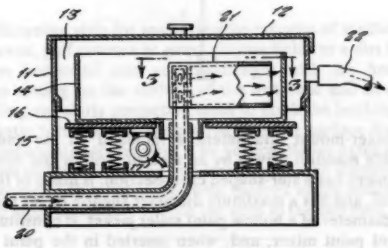
In a paint brush consisting of a handle, bristles, a ferrule, binder and a plug where the plug is used to form a pocket within the bristles, the plug is formed of a resilient cellular plastic material with exposed cells on part of its surface to form a mechanical bond between the plug and the binder by means of the exposed cells.

3,733,639

RENOVATOR

Martin R. Timian, 1518 7th, Bremerton, Wash.

Filed Oct. 19, 1970, Ser. No. 82,011
Int. Cl. A47l 5/14
U.S. Cl. 15—304 1 Claim



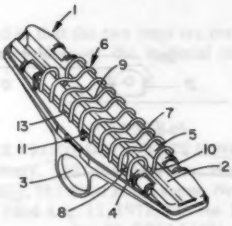
A cleaning apparatus for an automobile air cleaning element, the device comprising a housing with a removable cover plate so to position an automobile air cleaner unit there within, a spring-supported element support and a unit foundation there below, and an air line delivering air to a revolving air distributor while the housing is connected by a flexible hose to a vacuum cleaner, and a vibrating motor below the spring-supported element support, the motor having an extension cord therefrom for being connected to an electric power supply.

3,733,640

VACUUM CLEANER NOZZLE

Raymond H. Finberg, Elkins Park; Robert B. Edelson, Dresher, both of Pa., and Richard E. De Sisto, Salem, Mass., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.

Filed Aug. 2, 1971, Ser. No. 168,275
Int. Cl. A47l 9/06
U.S. Cl. 15—402 7 Claims



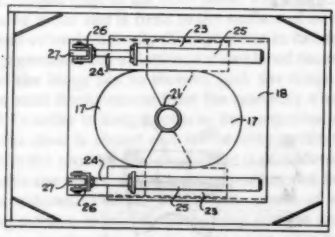
A vacuum cleaner nozzle having a wire-form carpet contact portion configured curvilinearly with a taper toward the nozzle in the direction of forward movement of the nozzle.

3,733,641

APPARATUS FOR STRIPPING FLUID FROM WELL PIPE

William Henry Brown, 13055 149th St., Edmonton, Alberta, Canada

Filed Aug. 17, 1971, Ser. No. 172,428
Int. Cl. E21b 33/08
U.S. Cl. 15—210 B 4 Claims

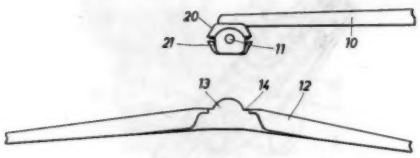


The apparatus is used in conjunction with a rig to strip mud or oil from a tubular string as it is pulled from a well. The apparatus comprises a pair of opposed, overlapping rubber pads mounted in a container. One or more air cylinders or like means link the pads. The cylinders can be actuated from the rig floor to draw the pads together around the string as it sways laterally during tripping. The pressure with which the pads press against the string can be adjusted; this permits the unit to operate as a stripper when the string is being pulled from the well, and as a well bore cover when the string is being run back into the well.

3,733,642
HINGE COUPLING FOR A WINDSHIELD WIPER ASSEMBLY

Eckhardt Schmid, Guglingen/Wurttemberg, Germany, assignor to SWF-Spezialfabrik Fuer Autozubehor Gustav Rau GmbH, Bietigheim, Germany

Filed Sept. 20, 1971, Ser. No. 182,487
Claims priority, application Germany, Sept. 29, 1970, P 70 35 947.6
Int. Cl. B60s 1/40
U.S. Cl. 15—250.32 9 Claims

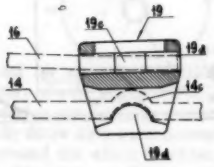


In connecting a windshield wiper arm to the yoke of a wiper blade, a monolithic coupling part formed of a plastic material is used. The wiper arm is pivotally connected to the coupling part and, in turn, the coupling part is disposed in locked engagement with the yoke. The coupling part is formed of a plurality of spaced wall sections which form recesses into which a U-shaped part of the wiper arm fits. A bearing pin fits through a continuous bore extending through the wall sections of the coupling part and through the U-shaped part of the wiper arm to afford the pivotal connection between the two. The portion of the yoke connected to the coupling part fits into slots formed on the outer surface of the coupling part and retains the bearing pin within the continuous bore.

3,733,643
WINDSHIELD WIPER FOR AUTOMOTIVES

Dario Arman, P.zza Adriano 15, Torono, Italy

Filed Oct. 1, 1971, Ser. No. 185,717
Claims priority, application Italy, Oct. 26, 1970, 70577 A/70
Int. Cl. B60s 1/04, 1/40
U.S. Cl. 15—250.42 1 Claim

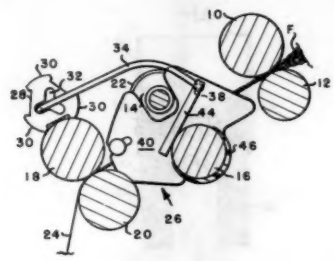


An improved automotive windshield wiper blade which simplifies the connections between the central bar of the blade support and the rocker arms. This device comprises a pair of brackets and a pair of bridges, both with superimposed cavities therein and internal projections within said cavities to fittingly engage a plurality of seats provided at the ends of said central bar, at the end of the rocker arms and at a bend formed in the middle of the rocker arms. This improved structure permits noiseless operation of the wiper even at high travelling speed.

3,733,644
SCRAPER MEMBER FOR DRAFTING SYSTEM

Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 857,767, Sept. 15, 1969, abandoned. This application July 16, 1971, Ser. No. 163,174
Int. Cl. D01h 5/64
U.S. Cl. 15—256.53 4 Claims

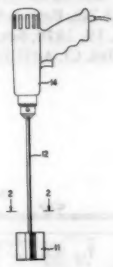


An intermittently actuated scraper member for one of the front rolls of a drafting system to scrape lint from such roll to prevent the accumulation of lint, trash, etc., thereon, thereby eliminating the cause of lap ups on such roll.

3,733,645
PAINT MIXING AND PAINT ROLLER MOUNTING APPARATUS

Edwin Nail Seiler, 80 Hunterdon Boulevard, Murray Hill, N.J.

Filed Aug. 31, 1971, Ser. No. 176,488
Int. Cl. B08b 1/04
U.S. Cl. 15—257 R 10 Claims



A mixer-mount attachment is included on the end of a rotatable mandrel driven by an electric drill or the like. The attachment has a star-shaped cross-section, is made of flexible material, and has a maximum diameter slightly larger than the inner diameter of a hollow paint roller jacket. It constitutes an efficient paint mixer, and, when inserted in the paint roller jacket, constitutes a mount for rotating a paint roller jacket within a helical channel for cleaning purposes.

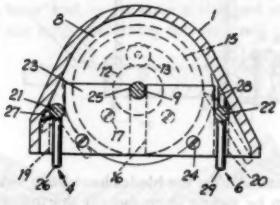
3,733,646
VACUUM CLEANER HEAD WITH SHAG RUG RAKE

Gary W. Mein, 6108 Cypress, Kalamazoo, Mich.

Filed June 14, 1971, Ser. No. 152,550
Int. Cl. A47l 9/06
U.S. Cl. 15—369 2 Claims

A transversely elongated suction head arranged in T-shaped and fixed relation to a tubular suction wand has transversely extending front and rear rake bars pivoted in its ends. Teeth

on the bars swing down on retracting motion of the head, and upwardly and rearwardly on advancing motion. A rotary brush positioned within the head and between the rakes is rotated



oppositely to the motion of the head by friction drive of wheels on the end of the head connected to the brush by reverse drive gearing also connected to the ends of the head.

3,733,647

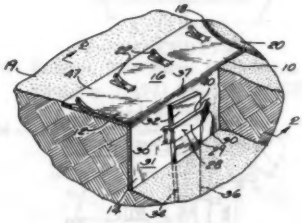
FASTENING STRIP FOR SYNTHETIC TURF

Joseph B. Jakel, 201½ Harrison St., Reeseville, Wis.

Filed July 6, 1971, Ser. No. 159,696

Int. Cl. A47g *27/04*

U.S. Cl. 16—16 **4 Claims**



A fastening strip for anchoring the margins of synthetic turf for lawns, golf courses or game playing fields to a dirt base includes horizontal and vertical flanges with the horizontal flange resting on the surface of the dirt base and having upstanding angularly projecting teeth to hook the backing of the synthetic turf and providing a flat bonding surface for gluing the turf backing to the strip. The vertical flange extends into a narrow slot in the ground and is provided with stamped loops for receiving thin flat stakes with tapered edges which wedge in the loops and firmly anchor the strip to the dirt base.

3,733,648

BEARING ASSEMBLY FOR A SWIVEL CASTOR

Sture Lennart Asberg, Savedalen, Sweden, and Hendrikus Jacobus Maria Timmer, Ede, Netherlands, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

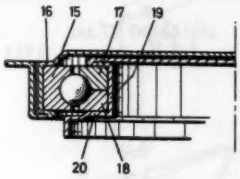
Filed June 10, 1971, Ser. No. 151,839

Claims priority, application Netherlands, June 10, 1970, 7008444

Int. Cl. B60b *33/00*

U.S. Cl. 16—21 **3 Claims**

A swivel bearing assembly for a swivel castor comprising a housing and a wheel fork, which parts are connected with each other, rotatable about a vertical axis, by means of a ball bearing, the outer ring of said bearing being connected to said housing and the inner ring being connected to the wheel fork,



characterized in that the two rings are restrained by deformation, such as folding of the material of housing and fork respectively.

3,733,649

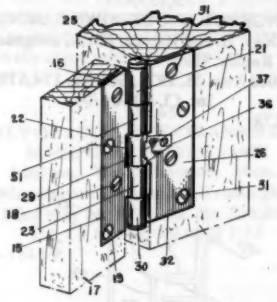
TAMPER PROOF DOOR BUTT HINGE ASSEMBLY

Charles E. Nagy, 3221 Benda Place, Hollywood, Calif., and John F. Nagy, 785 West End Avenue, New York, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,847

Int. Cl. E05d *11/00*

U.S. Cl. 16—137 **8 Claims**



This hinge plate assembly is generally of standard construction except that it has been provided with additional formations of the hinge parts and an added hinge pin keeper to prevent the extraction of the hinge pin when the door is closed with its hinged edge in the door jamb. The keeper is formed of flat spring metal and is fixed to the surface of one of the hinge plate and extends laterally through a slot in its bearing portion for engagement with a flattened shouldered recess on the side face of the hinge pin to thereby lock the hinge pin in place against axial displacement from the assembly when the door is closed. In order to keep access to the projection of the keeper when the door is closed and the bearing portions thereof extend into the room space, the keeper is shouldered or widened to overlie the edges of the bearing portion slot into which the keeper extends. Further to prevent access of a tool to the bearing portion to unroll the bearing portion and relieve the keeper projection there is provided a gap-closure on the other of the hinge plates.

3,733,650

HINGES

Jack E. Douglas, Walsall, England, assignor to Arthur Shaw Manufacturing Limited, Willenhall, Staffordshire, England

Filed June 7, 1971, Ser. No. 150,700

Claims priority, application Great Britain, June 19, 1971, 29,810/71

Int. Cl. E05f *7/02*

U.S. Cl. 16—160 **3 Claims**

In a lift-off hinge comprising two barrel members and a hinge pin which projects from and co-axially of one barrel

member and makes a sliding and rotatable fit within a bore in the other barrel member, the free end of the hinge pin is

formed with a cam face which is inclined to the axis of rotation and which engages with a complementary inclined cam face extending in the bore of the said other barrel member.

3,733,651

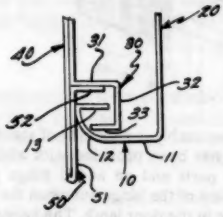
HINGE FOR KNOCKDOWN CABINET

Robert H. McKay, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Aug. 25, 1971, Ser. No. 174,679

Int. Cl. E05d *1/04*

U.S. Cl. 16—178 **14 Claims**



In a knockdown cabinet, the side panel is bent along its rear edge to define a laterally projecting, generally J-shaped flange which hooks back inwardly towards the side panel. The hooked portion of this flange interengages the hooked portion of a generally J-shaped retaining flange which projects laterally from the back panel of the cabinet, at a point spaced from its edge. The distance from the retaining flange to the edge of the back panel is approximately the same as the total length of the generally J-shaped flange projecting from the side panel such that when the side panel is opened, the leg of its generally J-shaped flange abuts the back panel and the interengaging hooked portions of the two flanges abut to thereby limit further rotation of the side panel and to provide a neat appearing seam between the side panel and the back panel.

3,733,652

DEVICE FOR MOLDING PATTIES AND THE LIKE

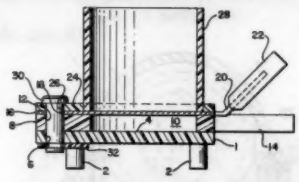
Eugene R. House, R.D. 1, Emporium, Pa.

Filed June 24, 1971, Ser. No. 156,192

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **9 Claims**

A molding device for hamburger patties and the like has a mold, or a plurality of stacked molds, each providing a through cavity and each covered by a cut-off blade, all mounted on an imperforate base surface and all pivoted thereon in communication with a supply hopper so that the



molds can be loaded after the blades have been swung out, the blades can then be swung in to cut off the material in them from the hopper and from the other molds, and the molds can then be swung out to discharge the patties.

3,733,653

DOSIFYING SAUSAGE MAKING MACHINE

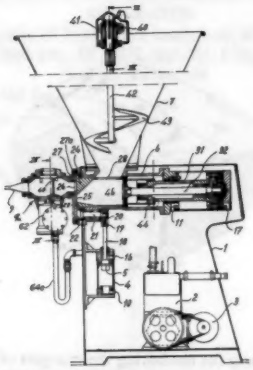
Don Jose Manuel Javaloy, and Don Jaime Prenafeta Garrusta, both of Nr. 306 Avenida Meridiana, Barcelona, Spain

Filed Nov. 27, 1970, Ser. No. 93,125

Claims priority, application Spain, June 11, 1970, 374060; June 11, 1970, 378890

Int. Cl. A22c *11/02*

U.S. Cl. 17—35 **11 Claims**



In a machine for measuring and dispensing dosages of sausage or other meats, a hopper forces minced meat into a piston chamber, with said piston forcing said deposited meat into a pair of passages formed to either side of a partition which then forces the deposited meat out of one or alternately a pair of outlet funnels.

3,733,654

HOSE CLAMP

Hugh C. Willianson, Willoughby, Ohio, assignor to Universal Metal Products, Inc., Wickliffe, Ohio

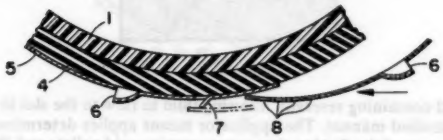
Filed May 10, 1971, Ser. No. 141,534

Int. Cl. B65d *63/02*

U.S. Cl. 24—20 TT **5 Claims**

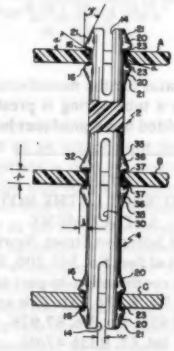
A hose clamp comprising a unitary spring metal strip having end portions which are curved to a radius equal to or less than the radius of the hose to be clamped, one end portion having circumferentially spaced from each other and from that end of the strip an inclined tongue and a tool abutment shoulder and the other end portion having circumferentially spaced from each other and from that end of the strip a series of circum-

ferentially spaced apart transverse slots therethrough and a tool abutment shoulder. The length of the strip from the tongue to the farthest slot is preferably approximately equal to the circumference of the hose to be clamped so that the strip may be wrapped manually around the hose with the tongue engaged in said farthest slot without requiring use of any tool. By reason of the curved end portions of the strip, the end of the strip which contains the tongue will engage the outer surface of the hose, and, as the strip is wrapped around the hose, the end of the strip containing the slots will contact the first



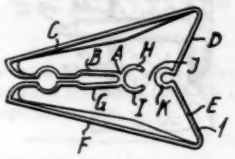
mentioned portion of the strip between the end thereof and the tongue and will slide therealong and be cammed radially outwardly by the tongue until such farthest slot registers with the tongue whereupon the slotted end portion will snap against the strip end portion which is against the hose to a holding position with the tongue engaged in the farthest slot. Thereafter, a tool such as a pair of pliers may be employed to squeeze the abutment shoulders toward each other thus to contract the strip around the hose with the tongue engaging a succeeding transverse slot to tightly clamp the hose against a nipple therewithin.

3,733,655
FASTENER DEVICE
Richard W. Kolibar, 7265 Glenn Oval Drive, Parma, Ohio
Filed Nov. 3, 1971, Ser. No. 195,227
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 P **5 Claims**



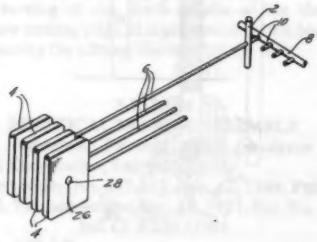
A unitary, one-piece fastener device for detachably mounting a plurality of apertured panels in stacked, spaced relation including an elongated body adapted for insertion at either end through the apertures in the panels. The body includes a series of lengthwise spaced, cam-like abutments disposed for resilient camming and locking engagement with respective of the panels for detachably mounting the same in such stacked relation in the installed position thereof.

3,733,656
CLOTHES-PEG
Fred Stalder, rue de Charmilles, 38 Geneva, Switzerland
Filed Apr. 4, 1972, Ser. No. 240,355
Claims priority, application Switzerland, Apr. 8, 1971, 5218/71
Int. Cl. D06f *55/02*
U.S. Cl. 24—137 R **4 Claims**



A clothes-peg made of a closed looped strip of synthetic material extending along the geometrical outline of a standard peg, wherein the elasticity of the peg is no longer obtained by a spring, but by the mere straining of the peg produced by the interengagement of the points joining two clothes engaging jaws on one hand and the two finger gripping ends on the other, the stress arising through the drawing together of said points stressing and deforming the structure, the jaws of which are thus normally urged into cooperation.

3,733,657
ASSEMBLY OF ATTACHMENTS AND METHOD OF MANIPULATING THE SAME
Gordon B. Lankton, West Boylston, Mass., assignor to Dennison Manufacturing Comapny, Framingham, Mass.
Filed May 25, 1972, Ser. No. 256,890
Int. Cl. A44b *9/00*; G09f *3/12*
U.S. Cl. 24—150 FP **22 Claims**



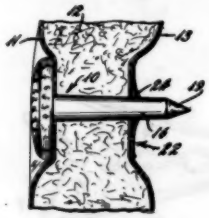
A plurality of attachments, each designed for insertion through an object and comprising enlarged parts connected by a narrow elongated section, are formed into an easily handled assembly by being secured together not only at those ends bearing the part adapted to be inserted through said object but also at the other ends thereof, thereby to prevent the individual attachments from tangling or snarling while they remain a part of the assembly. Preferably the latter securement is of a type more readily frangible in torsion than in tension, thereby to facilitate the separation of a given attachment from the assembly after that attachment has been operatively associated with said object while reliably retaining the attachments secured to one another in the assembly under standby conditions.

3,733,658

UPHOLSTERY NAIL

David B. Mitchell, 2905 Walnut, Garland, Tex.

Filed Nov. 13, 1970, Ser. No. 89,327
Int. Cl. A47b 19/01
U.S. Cl. 24—152 1 Claim



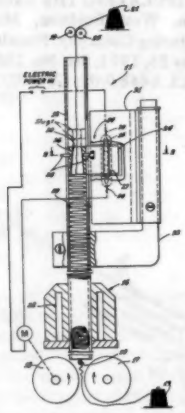
A decorative one-piece plastic fastener for securing layers of sheet material together. The fastener is a penetrating nail having a head with an embossed design on the center surface and a locking disk for holding the nail and upholstery material in assembled relation.

3,733,659

APPARATUS FOR CRIMPING THERMOSETTING FIBER

Ashley P. Smith, Asheville, N.C., assignor to Northrop Carolina, Inc., Swannanoa, N.C.

Filed Apr. 5, 1971, Ser. No. 130,934
Int. Cl. D02g 1/12
U.S. Cl. 28—1.7 2 Claims



Apparatus useful in the textile art adapted to maintain the uniformity of a filament in a crimping facility in which the facility functions to continuously monitor the level of crimped filament therein insuring a filament of uniform quality having predetermined characteristics.

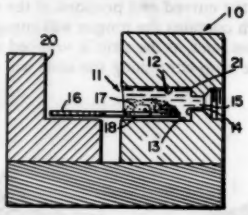
3,733,660

SLOT APPLICATOR METHOD

Milton Kallianides, 49 Raymond Street, Brockton, Mass., and Gerhart P. Klein, 52 Gifford Street, Manchester, Mass.

Division of Ser. No. 701,488, Jan. 29, 1968, abandoned. This application Nov. 27, 1970, Ser. No. 93,486
Int. Cl. B44d 1/18; C23c 1/10
U.S. Cl. 29—25.41 9 Claims

The combination of a reservoir containing a fluid and applicator means for applying the fluid to means carrying a plurality of pellets to be used as capacitors. The applicator means includes upper and lower walls connected by a rear wall so as to form a slot having a determined length and width. A channel is formed in one of the walls so as to couple the slot to the fluid containing reservoir allowing fluid to flow to the slot in a controlled manner. The applicator means applies determined amounts of the fluid to the means carrying said pellets and the pellets passing therethrough.

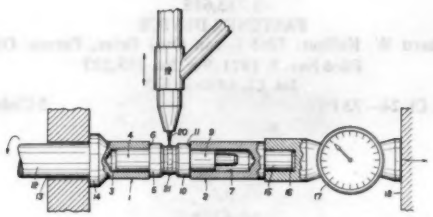


3,733,661

METHOD FOR THE MANUFACTURE OF A PIEZOELECTRIC TRANSDUCER AND TRANSDUCER MANUFACTURED BY THIS METHOD

Rudolf Zieringer, Graz, Austria, assignor to Hans List, Graz, Austria

Division of Ser. No. 778,936, Nov. 26, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,443
Int. Cl. B01j 17/00; H04r 17/00
U.S. Cl. 29—25.35 3 Claims



Method and apparatus for the manufacture of piezoelectric transducers in which a tube spring is prestressed by an axial load with the tube welded to a transducer housing member.

3,733,662

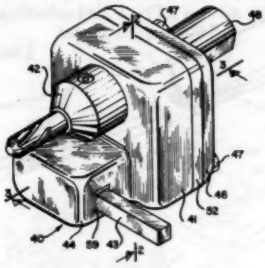
SELF-DRIVEN TURRET LATHE ROTATING TOOL ATTACHMENT

Joseph B. Plevyak, 19 Jefferson Street, Newton, N.J.

Continuation-in-part of Ser. No. 345,200, Feb. 17, 1964, Pat. No. 3,349,656, and a continuation-in-part of Ser. No. 677,675, Oct. 24, 1967, Pat. No. 3,538,731. This application Nov. 9, 1970, Ser. No. 87,976
Int. Cl. B23b 47/02
U.S. Cl. 29—57 4 Claims

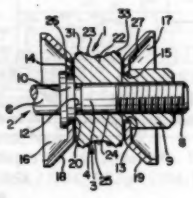
A turret lathe rotating tool attachment is provided with gear ring to effect rotation of a rotary tool in response to a mere bumping of a laterally extending rack bar slide as by the manipulation of the lathe cross slide that can be cam operated from the lathe machine drive. The attachment is self contained and has a rearwardly extending shank that is adapted to be secured in a radially extending opening in the turret head and clamped therein against rotation and axial movement therefrom. A spindle is provided in each of the forms of this invention which will be rotated at sufficient speed to effect

with a drill or tapping element a completed operation upon a workpiece. In one of the forms of the invention provision is



made to pre-accelerate the drive spindle prior to a main drive through a gear train effecting high speed rotation upon the spindle.

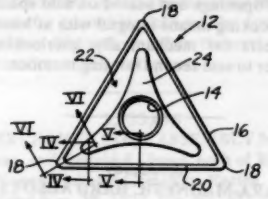
3,733,663
CORNER SHAPING TOOL
William S. Brucker, Towson, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed May 12, 1971, Ser. No. 142,675
Int. Cl. B23d 71/00; B26d 1/12; B27g 13/00
U.S. Cl. 29—78 R **2 Claims**



A rotary tool for corner shaping wood and other materials and adapted for use as an attachment for a portable power drill. The tool comprises a rasp or toothed cutter assembly mounted on a spindle and rotatable therewith between two guides. The guides are free to rotate about the spindle and roll along the workpiece as the shaping operation progresses. The surface of the cutter assembly is contoured complimentary to that desired on the workpiece corner. The cutter assembly may include one suitably shaped cutter, or it may include a plurality of cutters, and the spindle assembly is constructed to readily accommodate one or more cutters, so that a number of different shaped corners can be produced.

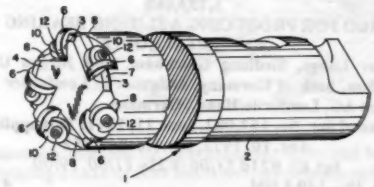
3,733,664
CUTTING INSERT
Richard E. McKelvey, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Nov. 23, 1971, Ser. No. 201,366
Int. Cl. B26d 1/00
U.S. Cl. 29—95 **12 Claims**

The present invention is drawn to an indexable cutting insert having a cutting edge land and a chip controlling groove about the periphery of the cutting face of the said insert in a closed path wherein the transverse width of the groove is



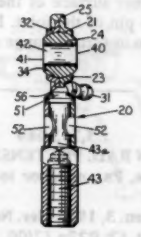
varied to provide more favorable chip controlling function when rates and depths of machining feeds are varied with the said insert during operational use.

3,733,665
ROTARY CUTTING TOOL
Frank A. Spriggs, Willoughby, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Feb. 22, 1971, Ser. No. 117,418
Int. Cl. B26d 1/12
U.S. Cl. 29—105 R **8 Claims**



Rotary cutting tool has plural circumferentially spaced milled arcuate slots in the end face of the cutter body providing arcuate seats for circular blade inserts which are releasably clamped in the slots. The slots are of sufficient depth to provide adequate support for the blade inserts during the cutting operation, and the slots also provide a preset dimension for the blade inserts as determined by the depth of the slots thus permitting turning of the blade inserts within the slots to present a new cutting edge or replacement of the blade inserts without affecting the cutting diameter of the tool.

3,733,666
SPHERICAL BEARING ASSEMBLY
Alfreds R. Rozentals, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.
Division of Ser. No. 887,217, Dec. 22, 1969, Pat. No. 3,614,182. This application Oct. 14, 1971, Ser. No. 189,304
Int. Cl. B23p 11/00
U.S. Cl. 29—149.5 B **5 Claims**



A self-aligning, spherical bearing assembly comprising a first and second housing member, each of said housing mem-

bers having circular openings therethrough with each opening being defined by a spherical seating portion, a spherical ball rotatably enclosed within said housing members and in alignment with said openings and seated on said spherical seating portions, interlocking means integral with at least one of said housing members for mechanically interlocking said first housing member to said second housing member.

3,733,667

PARA-MAGNETIC HARD ALLOYS

Hirotoshi Miyashita, 4724 Ozasa Danchi; Tomio Nishimura, 225 Oaza Notame, and Sumiharu Tomono, 802 Oaza Shimay Amado, all of Fukuoka, Japan

Filed Sept. 10, 1971, Ser. No. 179,496

Int. Cl. B22f 1/00

U.S. Cl. 29—182.7 **2 Claims**

Para-magnetic WC base hard alloys comprising a carbide composition primarily consisting of tungsten carbide and a binder consisting of nickel and molybdenum wherein a part of said nickel is replaced by an eutectic Ni-P composition.

3,733,668

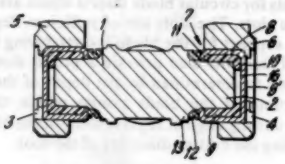
METHOD FOR PRODUCING A SLIDING BEARING FOR A UNIVERSAL JOINT

Gunther Lange, Siedlung Gluckkauf, and Jurgen Ulderup, Haldem, both of Germany, assignors to Lemforder Metallwaren AG, Lemforde/Hann., Germany

Division of Ser. No. 152,082, June 11, 1971. This application Apr. 10, 1972, Ser. No. 242,852

Int. Cl. B21d 53/00; B23p 11/00, 19/00

U.S. Cl. 29—149.5 NM **4 Claims**



The sliding bearing includes an outer cup-shaped thin metal bearing bush seated in the ends of a fork of the universal joint, and an inner sliding bush, of abrasion and oil resistant plastic composition material, embracing each pin of the universal joint, there being a predetermined clearance between the inner and outer bushes. The plastic inner bush is formed by pouring around a cylindrical core inserted into the outer bush. The plastic bush, when it sets, shrinks to disengage its outer surface from the inner surface of the outer bush, and has a gripping fit with the pin of the joint. In this embodiment also the outer bush has an in-turned flange at its open end.

3,733,669

REACTION RAIL PRETENSION METHOD

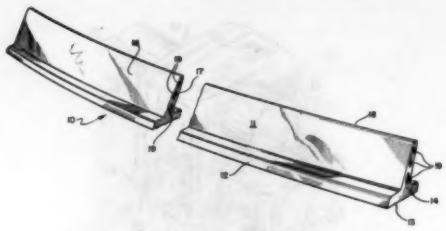
Owen C. Coho, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 3, 1972, Ser. No. 214,973

Int. Cl. B23p 17/00, 11/02

U.S. Cl. 29—155 R **7 Claims**

A method of prestressing a reaction rail for a linear induction motor by securing the lower convex surface of a longitudinally curvilinear rail to a rigid planar base to place them in contiguous relationship along the length of the rail, and to



thereby place the upper and lower portions thereof in conditions of tension and compression, respectively.

3,733,670

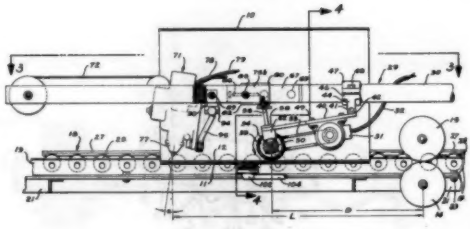
APPARATUS FOR MAKING FOOD CONTAINERS

Thomas D. Troughton, Richmond, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Continuation-in-part of Ser. No. 25,637, April 6, 1970. This application June 29, 1972, Ser. No. 267,498

Int. Cl. B23p 19/00, 3/00

U.S. Cl. 29—200 A **15 Claims**



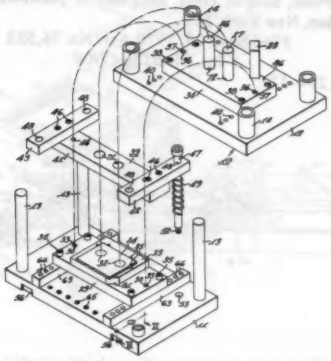
Apparatus for making tin lined drums and other large containers adapted for use in storing and shipping food products. The apparatus is particularly concerned with making the shell or body tube for such a container, and it utilizes as the starting material for the body tube a flat metal sheet plated along at least one side thereof with a layer of tin and formed into a tube having overlapping longitudinal edges and the layer of tin disposed within its interior. The apparatus includes welding mechanism located along a conveyor adapted to transport such body tube through an operating station at which the welding mechanism is effective to secure the overlapping edge portions of the body tube one to another. The apparatus further includes an abrading brush operative to scale the inner surface of the body tube along the welded edge portions thereof, and it still further includes tin spraying mechanism for spraying molten tin onto the inner surface of the body tube along its welded overlapping edge portions. The brush and spraying mechanism are carried by boom structure supported with respect to the conveyor so as to pass through the interior of any body tube transported thereby; and the brush, spraying mechanism, and welding mechanism have particular mechanical and functional relationships with respect to each other, to the conveyor, and to any body tube being transported by the latter.

3,733,671

FIXTURE FOR ASSEMBLING DIE AND WORK SUPPORT PLATES

Walter Strobel, 4433 North 68th St., Milwaukee, Wis.

Division of Ser. No. 9,537, Feb. 9, 1970, Pat. No. 3,673,902.
This application Feb. 3, 1972, Ser. No. 223,328
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 J 2 Claims



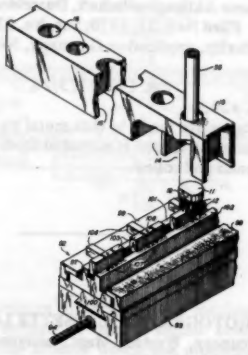
A fixture assembly has lower and upper fixture shoes mounted on guide pins for reciprocal movement toward and away from each other with the lower and upper fixture shoes having first and second series of apertures in precise alignment with each other. A first access opening is provided in the lower fixture shoe and a second access opening is provided in the upper fixture shoe to facilitate locating and installing working tools on a support plate in proper alignment and working relationship relative to a cooperating die.

3,733,672

APPARATUS FOR AUTOMATICALLY INSERTING COMPONENTS IN A WORKPIECE

William D. Bohannon, Jr., Graham, and Hoye D. Church, Burlington, both of N.C., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,848
Int. Cl. H05k *13/04*; B23p *19/04*; B23q *7/10*
U.S. Cl. 29—203 B 8 Claims



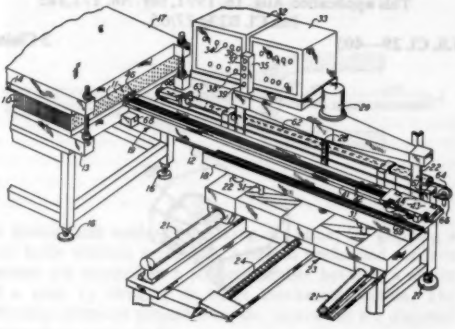
A machine that automatically inserts electrical components in preselected locations on a workpiece includes a hopper assembly which houses a plurality of containers and means connected with the hopper assembly to dispense the containers from the assembly to a station remote from the assembly. The station includes means for selectively ejecting components within the containers therefrom and a collector assembly movable to and from the station for receiving the ejected components. A transfer assembly picks up the components from the collector assembly and transfers the components to the preselected location on the workpiece.

3,733,673

HEAT-EXCHANGE CORE ASSEMBLY MACHINE

Fred M. Young, and Ronald E. Jones, both of Racine, Wis., assignors to Young Radiator Company, Racine, Wis.

Filed Nov. 29, 1971, Ser. No. 202,782
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 R 18 Claims



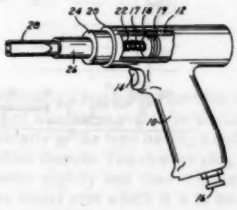
An assembly machine for heat exchange cores and having a jig for holding a bank of core fins with rows of holes and a tube guide for slidably guiding tubes into the holes. A slide moves over the guide forcing the tubes into the holes, and the slide actuates a switch which causes the slide to retract and get set for engaging additional tubes and force them into other rows of holes. Also, the machine includes a switch and index means for aligning the tube guide with the rows of fin holes after the previous tube or tubes has been inserted into the holes. The index means includes horizontal and vertical indexing so that the guide can be aligned with all of the rows of fin holes. The guide has a nose which extends between the extending ends of the tubes in fins, and the nose has a guide slot or tunnel for closely guiding the tubes into the rows of holes.

3,733,674

DEVICE FOR WIRING SOLDERLESS CONNECTOR TERMINAL BLOCKS

Edward E. Shirley, 1510 South King St., Denver, Colo.

Filed Oct. 28, 1971, Ser. No. 193,343
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 HC 7 Claims



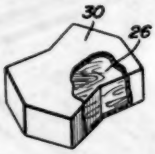
A wire setting tool for inserting a wire into a slit type contact on an electrical terminal block, including a housing which

encloses a power driven piston connected to an extendable shaft. The end of the shaft is bifurcated forming a slot and is arranged to straddle the thickness of a contact. The device is positioned over a contact with the wire held across the shaft slot so that as the shaft is extended the wire is inserted into the slit of contact. The housing can be provided with a plurality of parallel shafts which are extendable in unison and spaced to engage a plurality of contacts so that a number of wires can be set simultaneously.

3,733,675
METHOD OF UTILIZING JUNK CARS TO PRODUCE BUILDING BLOCKS

Warren B. Diederich, P.O. Box 406, Fargo, N. Dak.

Continuation of Ser. No. 738,996, June 21, 1968, abandoned. This application Aug. 16, 1971, Ser. No. 172,185
Int. Cl. B23g *17/00*
U.S. Cl. 29—403 **3 Claims**

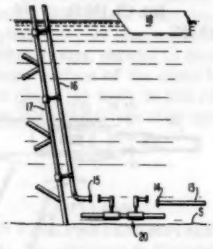


The method of compressing discarded cars into geometrically complementary shapes and coating the shapes with an air and water impervious material. The shapes can then be used for paving revetments, building retaining walls, or piled up to form dikes or jetties.

3,733,676
METHOD FOR CONNECTING PIPELINES

William A. Morgan, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Division of Ser. No. 835,647, June 23, 1969, Pat. No. 3,667,128. This application Jan. 17, 1972, Ser. No. 218,393
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **1 Claim**

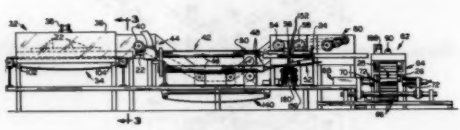


A method and apparatus for determining the spatial relationship between a pair of adjacent but separated conduit ends, re-establishing the spatial relationship thus determined at a remote environment, fashioning a conduit connecting segment at the remote environment and connecting the conduit thus fabricated to the spaced conduit ends.

3,733,677
APPARATUS AND METHOD TO PRODUCE CYLINDRICAL ARTICLES

Romain Eugene Loeffler, Defiance, and Vernon Charles Plotts, Waterville, both of Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,552
Int. Cl. B23p *17/00*
U.S. Cl. 29—411 **24 Claims**



A method and apparatus of applying stocking sheaths to cylindrical articles involving passing the articles longitudinally through the interior of a cylindrical mandrel bearing on its outer surface a supply of continuous stocking material. As the articles emerge from the mandrel they pickup overhanging stocking material and draw it off the mandrel. The interconnecting stocking between successively emerging articles is severed by shearing means. Spacing sufficient to provide stocking portions overhang the ends of the articles is achieved by driving the articles emerging from the mandrel at a greater speed than they are driven through the mandrel. Filter elements are formed of hollow, fibrous cylinders covered with a cloth stocking by tucking the overhanging ends of the stocking into the hollow ends of the cylinders.

3,733,678
METHOD OF MAKING STRIPS OR TAPE FROM SMALL METAL PARTICLES

Otto Wessel, Duisburg-Ungelsheim, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 23, 1970, Ser. No. 92,277
Claims priority, application Germany, Nov. 27, 1969, P 19 60 460.5
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **10 Claims**

Strips or tapes are made in that metal particles are pressed into a porous ingot, a tube is extruded from the ingot, and the tube is flattened and rolled.

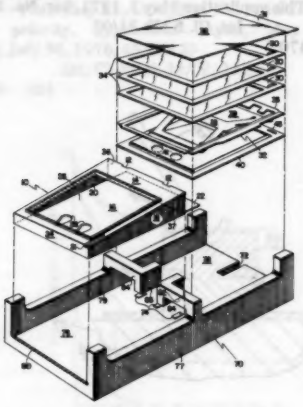
3,733,679
PHOTOGRAPHIC CASSETTE LOADING

Louis O. Bruneau, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 21, 1971, Ser. No. 136,070
Int. Cl. B23p *19/00*; B23q *7/10*
U.S. Cl. 29—431 **10 Claims**

Cassettes in which photographic film units are contained and exposed are loaded with battery means, spring means and

photographic film units by forming a stack of components, compressing the stack and inserting it partially into the mouth



of an open cassette, removing the compressive force and inserting the stack or components the rest of the way into the cassette.

3,733,680

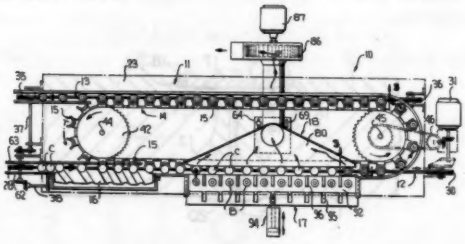
METHOD OF AND APPARATUS FOR ASSEMBLING INTERNESTING MEMBERS

William J. Cartwright, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,048

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—429 **20 Claims**



This disclosure relates to an automatic mechanism for assembling plastic bottles or liners within containers, the mechanism including holders which are mounted for movement about an endless path and there being associated with the holders means for serially positioning containers in the lower portions of the holders and means for simultaneously placing a plurality of plastic bottles in the upper portions of the holders, and in the area of the positioning of bottles within the holders, there being vacuum means to retain the bottles in elevated positions above the containers temporarily and then to serially release the bottles and permit them to be positioned within the respective containers.

3,733,681

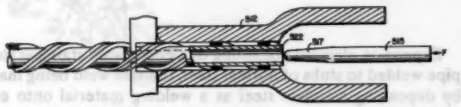
METHOD OF FORMING GRIPPING DEVICE

Seymour N. Schlein, University Heights, Ohio, assignor to The Tanner Manufacturing Company, Cleveland, Ohio

Division of Ser. No. 729,610, May 16, 1968, Pat. No. 3,561,071. This application Aug. 17, 1970, Ser. No. 64,617

Int. Cl. B23p *11/02*

U.S. Cl. 29—447 **7 Claims**



A device, and method of making the same, for gripping a linear body wherein a plurality a helical preformed resilient elements are secured in a socket member between a sleeve and a core by swaging or other mechanical action. The preformed elements project from the socket and are disposed to wrappingly engage a line.

3,733,682

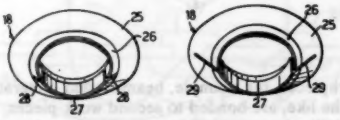
METHOD OF FORMING A LOCKING RING FOR PRESSURE VESSEL

Jacques H. Mercier, 49 rue de Naples, Paris, France

Division of Ser. Nos. 613,660, Feb. 2, 1967, Pat. No. 3,537,481, and Ser. No. 822,445, May 7, 1969, Pat. No. 3,640,172. This application Oct. 13, 1971, Ser. No. 188,955

Int. Cl. B23p *11/02*

U.S. Cl. 29—450 **1 Claim**

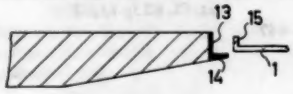


This invention relates to a method of forming a locking ring for the closure plug of a pressure vessel for storing fluid under pressure and particularly of the type having a deformable partition such as a bladder therein. The closure plug has a flanged inner end of diameter slightly less than the diameter of the port of the pressure vessel into which it is to be inserted and the locking ring normally is of greater diameter than said port and is foldable for insertion through said port so that it may then be restored to its original shape to encompass the closure plug and restrain outward movement thereof from such port.

3,733,683
METHOD OF MANUFACTURING AN EXPANSION ELEMENT

Johannes A. Kemper, c/o N. V. Machinefabrie "Arnhem", Industriestraat 9, Arnhem, Netherlands

Filed May 12, 1971, Ser. No. 142,735
Claims priority, application Netherlands, May 12, 1970, 7006873
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 3 Claims

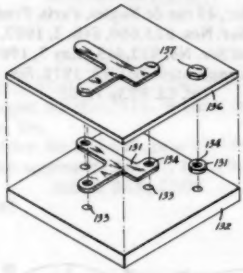


Expansion element consisting of a corrugated stainless steel pipe welded to stubs of normal steel, the said weld being made by depositing stainless steel as a welding material onto end surfaces of the stubs, milling the deposited material for forming a substantially radial and a substantially cylindrical surface intersecting each other and welding the corrugated pipe to said surface.

3,733,684
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, which is a continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,349
Int. Cl. B23k 21/00
U.S. Cl. 29—470.1 11 Claims

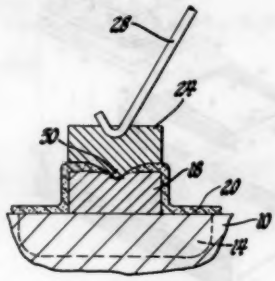


First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second work-pieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,733,685
METHOD OF MAKING A PASSIVATED WIRE BONDED SEMICONDUCTOR DEVICE

James E. Kaupplia, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 778,625, Nov. 25, 1968, Pat. No. 3,629,669. This application May 3, 1971, Ser. No. 139,733
Int. Cl. B23k 21/00
U.S. Cl. 29—470.1 6 Claims

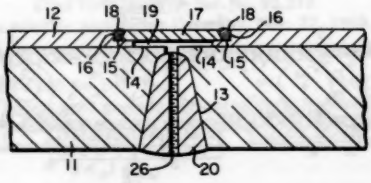


A semiconductive device is described in which electrical contact is made with the semiconductor surface through a rupture in an overlying frangible dielectric coating. Contact is achieved by forming an electrode pad on the semiconductor surface, coating the surface of the semiconductor and the electrode pad with a frangible layer of dielectric, forming a terminal connector contact pad on the dielectric coating over the electrode pad, rupturing the dielectric layer to communicate the pads, and bonding a terminal lead to the connector contact pad. In a preferred embodiment, the rupturing and bonding steps are simultaneously achieved by compression bonding a terminal wire to the connector contact pad.

3,733,686
METHOD FOR WELDING TITANIUM CLAD STEEL

Lawrence Ambrose Maucher, Lancaster Village, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1971, Ser. No. 192,931
Int. Cl. B23k 31/02
U.S. Cl. 29—472.1 1 Claim



Titanium clad steel parts are welded together by removing the titanium clad from the steel for a sufficient distance to permit welding of the steel without contaminating the titanium, machining into the titanium clad, adjacent to surface from which the titanium clad was removed, a shelf, welding the steel portion with steel to form a steel joint uncovered by titanium the length of the steel weld, applying a titanium strip over said uncovered steel area but not touching the steel area, said titanium strip resting on the titanium shelves of the parts to be welded, and welding said titanium strip to said titanium clad at each side of said strip.

3,733,687

METHOD OF SOLDERING AN ALUMINUM METAL TO AN ALUMINUM OR ANOTHER METAL

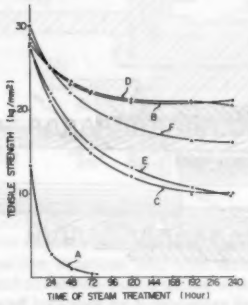
Jun Tanaka; Toshihiko Taguchi, and Yoshihiro Nishibori, all of Tokyo, Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

Filed May 25, 1971, Ser. No. 146,625

Claims priority, application Japan, May 30, 1970, 45/46133; July 30, 1970, 45/66128

Int. Cl. B23k *31/02, 35/24*

U.S. Cl. 29—504 5 Claims



A solder alloy and method for its use in soldering an aluminium metal consisting of:

Al 0.5 – 4.5% by weight
Cu 0.1 – 4% by weight
Mg 0.005 – 0.08% by weight
Ni 0 – 0.5% by weight
Cr 0 – 0.5% by weight, and
Zn balance.

3,733,688

METHOD OF MANUFACTURE OF SHORT-CIRCUIT RINGS

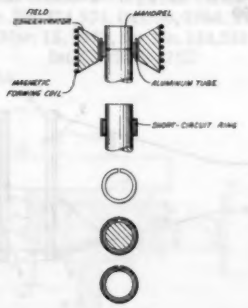
Hans-Joachim Lippmann, Boxdorf, and Horst Schenk, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 23, 1970, Ser. No. 5,203

Claims priority, application Germany, Jan. 30, 1969, P 19 04 402.1

Int. Cl. B23p *11/00*

U.S. Cl. 29—523 8 Claims



A slit ring is rolled from a band of metal to a diameter which deviates from a desired diameter. The slit ring is clamped to maintain it at a desired diameter. A tube is fitted to the inner or outer surface of the ring. The tube is fitted to the ring by electromagnetic forming and the ring is unclamped after the fitting of the tube.

3,733,689

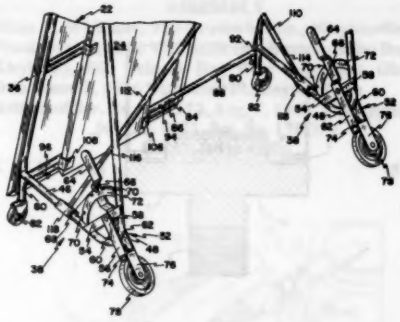
METHODS OF PREPARING WALL COVERING

Firth Kay Armitage, 3317 South 3130 East, Salt Lake, Utah

Division of Ser. No. 870,002, Oct. 15, 1969, Pat. No. 3,598,390. This application Apr. 14, 1971, Ser. No. 133,930

Int. Cl. B23q *7/00*

U.S. Cl. 29—559 6 Claims



Method for preparing wall covering prior to placement of the wall covering on a wall, the method relying upon a laterally expandable frame and a plurality of work surface panels removably mounted upon the frame. The frame can be oriented in either a generally horizontal or an upright position disposed at any one of a plurality of angles with respect to the vertical. Wheels mounted upon one end of the frame accommodate lateral movement when the frame is in the upright orientation and are restrainable so that in the upright orientation, the apparatus can be easily displaced in only a side-to-side direction. A guide for the wall covering dispenses wall covering over the assembled work surface segments at a controlled rate.

3,733,690

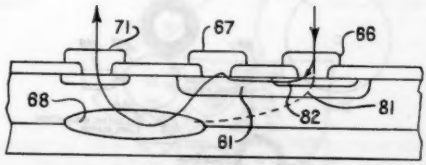
DOUBLE JUNCTION READ ONLY MEMORY AND PROCESS OF MANUFACTURE

Joseph D. Rizzi, Los Gatos, and Lloyd D. Fagan, Santa Clara, both of Calif., assignors to Intersil Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 54,531, July 13, 1970, abandoned. This application Dec. 14, 1970, Ser. No. 97,492

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 2 Claims



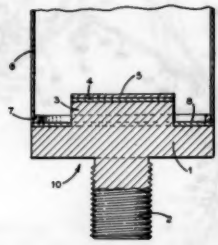
An integrated circuit READ ONLY MEMORY matrix having back-to-back PN junctions between each intersection of rows and columns. One junction of selected connections are electrically shorted to program the ROM by establishing single diode or junction connections at predetermined intersections. Electrical shorting is accomplished by causing ohmic contact material to migrate along the surface of semiconductor material by the selective application of electrical power to establish a low resistance current path between such contacts.

3,733,691

PROCESS FOR MAKING SEMICONDUCTOR DEVICES

Helmut Mann, Osnabrueck, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Filed Oct. 7, 1968, Ser. No. 765,503
Int. Cl. B01j 17/00
U.S. Cl. 29—588 1 Claim



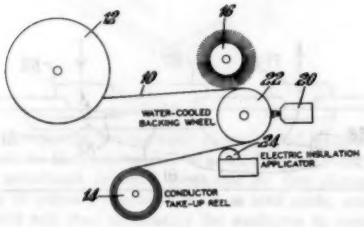
A process for making semiconductor devices of the type comprising a base portion of copper or copper alloy having a threaded stem portion extending from one side of the base portion, a semiconductor element being mounted on the other side of the base portion, together with a cover member for enclosing the semiconductor element; the cover member being secured to the base portion in a manner to avoid weakening the base portion.

3,733,692

METHOD OF FABRICATING A SUPERCONDUCTING COILS

William A. Fietz, Somers, N.Y., and Donald M. Yenni, Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,756
Int. Cl. H01v 11/00
U.S. Cl. 29—599 8 Claims



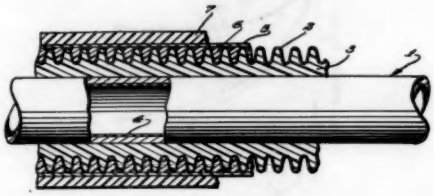
A superconducting coil fabricated in a single operation from a flat strip of electrically conductive tape by roughening a clean surface of the tape and passing it under an arc plasma effluent of metallic particles to establish a direct superconductive coating thereon, superimposing a layer of insulator and winding the resulting composite tape structure into the desired inductive geometry.

3,733,693

HIGH PRECISION HOLLOW CONDUCTOR STRUCTURE FOR THE TRANSMISSION OF ELECTROMAGNETIC WAVES, AND METHOD OF MAKING THE SAME

Herbert Larson, Munich, and Martin Helmut, 3 Hannover, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Kabel-und Metallwerke Gutehoffnung-shutte Aktiengesellschaft, Hanover, Germany

Division of Ser. No. 771,253, Oct. 28, 1968. This application Mar. 13, 1970, Ser. No. 24,405
Int. Cl. H01p 11/00; B23p 11/02
U.S. Cl. 29—600 4 Claims



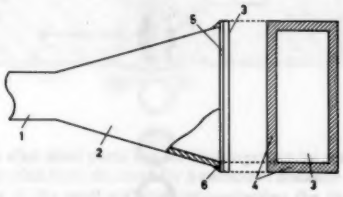
A high precision hollow conductor structure, and method of making same, for the transmission of electromagnetic waves, such as H_{01} type waves, in which a hollow conductor member forming the inner wall of the conductor structure is constructed with high accuracy by electro-formation on a mandrel, the conductor member having an inner diameter of circular configuration with the inner surface being uniform within very low tolerances, whereby, efficient wave transmission therein may be achieved, a metal jacket, having an undulating longitudinal cross-section, encircling said conductor member in rigid relation with respect thereto, with the interstices between the member and the jacket being filled with a rigid material, the matrix core being removed from said hollow conductor member following assembly of said member and jacket.

3,733,694

PROCEDURE FOR SEALING WAVEGUIDE NOZZLES

Jan Vlietstra, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed June 18, 1971, Ser. No. 154,281
Claims priority, application Netherlands, July 2, 1970, 7009767
Int. Cl. H01p 11/00; H01q 13/00
U.S. Cl. 29—600 2 Claims



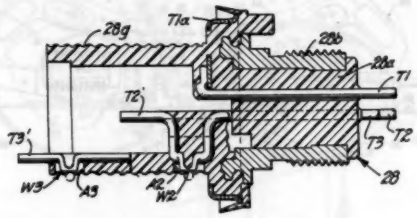
Waveguide nozzles are sealed by means of polytetrafluoroethylene strips, whose dimensions correspond with those of the waveguide nozzles to be sealed. The edges of a polytetrafluoroethylene strip are provided with a film of solderable material. The strip is soldered to a waveguide nozzle using said film.

3,733,695

METHOD OF MAKING POTENTIOMETER TERMINATIONS

Sydney W. Frey, Jr., Upland, and Robert W. Gaines, Mira Loma, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Oct. 26, 1971, Ser. No. 192,118
Int. Cl. H01c 17/00
U.S. Cl. 29—610 3 Claims



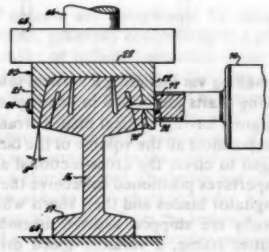
A potentiometer of the wirewound type having a wirewound helical resistance element with electrical ends precisely positioned at respective locations and wire terminal members economically and accurately fusion-united with the element at said electrical end locations by a procedure including reducing the cross-section of portions of the wire terminals, disposing such portions at respective ones of said locations with the portions on opposite sides of a line parallel to the axis of the helix of the winding and the edges along the line and in line of contact with the wire of the element, fusing fusible electrically conductive material to the wire terminals at said locations, disposing electrical-end portions of the resistance element in contact with the fusible material at respective ones of said locations, and passing heating electrical current through the portions of reduced cross-section of said wire terminal members to fuse said fusible electrically conductive material to said element to fusion-unite and electrically connect said wire terminal members to respective electrical ends of the resistance element. The terminal wire members are embedded in part in a potentiometer body member and exposed at said locations and have terminal end portions extending from the potentiometer body member, and are thus precisely located and maintained in exactly the desired position for welding.

3,733,696

COMPOSITE CONDUCTOR BAR AND METHOD OF MANUFACTURING

Donald H. Scofield, and James A. Corl, both of San Carlos, Calif., assignors to Insul-8-Corp., San Carlos, Calif.

Division of Ser. No. 771,931, Oct. 30, 1968. This application Mar. 15, 1971, Ser. No. 124,551
Int. Cl. H01b 13/22
U.S. Cl. 29—624 4 Claims



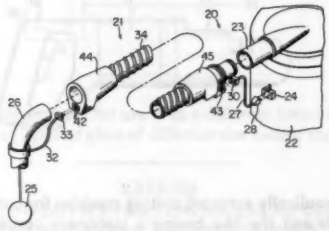
An elongated structural steel cap which is slightly smaller than an extruded aluminum conductor bar is forced onto the bar and held in this position by nails explosively driven through the side legs of the cap end into the side walls of the conductor bar. Slots formed in the aluminum conductor bar permit the bar to be laterally distorted as the cap is forced onto the bar so that wide variations in the cap dimensions can be accommodated.

3,733,697

METHOD OF MAKING A VACUUM CLEANER HOSE ASSEMBLY

William T. Wickham, 930 Brunswick Dr., Waynesville, N.C.; Frank Brown, 5556 Viewpoint Dr., Dayton, Ohio; Donald L. Kleykamp, 868 Heincke Dr., West Carrollton, Ohio, and Otto Kossuth, 5936 Deanmont Pl., Dayton, Ohio

Division of Ser. No. 848,272, Aug. 7, 1969. This application July 28, 1971, Ser. No. 176,372
Int. Cl. H01r 43/00
U.S. Cl. 29—628 5 Claims



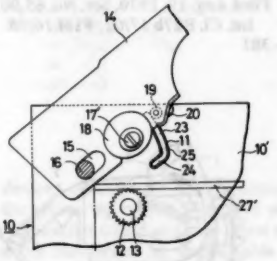
A vacuum hose is provided having a plurality of reinforcing wires in the form of electrical conductors which are made as an integral part of the hose and each conductor has electrical components fixed to its opposite ends. A pair of hose connectors is provided at opposite ends of the hose end formed substantially as an integral part thereof to define an assembly with each hose connector having associated electrical components embedded therein and providing the sole support therefor.

3,733,698

ELECTRIC CAN OPENER

Osamu Yamamoto, Kasugai, Japan, assignor to Kawaguchi Shoichi, Aichi-ken, Japan

Filed Mar. 5, 1971, Ser. No. 121,479
Claims priority, application Japan, Aug. 29, 1970, 45/75701
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 2 Claims



An electric can opener has an elongate lever carrying a cutter wheel and pivoted forwardly of a front member of a housing at a slot formed at one end portion and longitudinally of the lever.

The lever is provided with a locking member extending towards the front member and is locked in a longitudinally displaced position by the engagement between the locking

member and a engaging piece extending forwardly of the front member when the lever is displaced along its longitudinal direction within the length of the slot by the thrust exerted to the lever as the result of the can opening operation of the cutter wheel.

3,733,699

HYDRAULICALLY ACTUATED CUTTING MACHINE FOR RODS AND THE LIKE

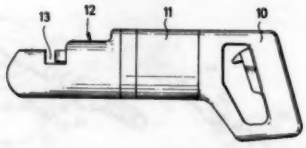
Rudolf Bock, Palmerstrasse: 9, 7031 Holzgerlingen, Germany

Filed May 19, 1971, Ser. No. 144,767

Claims priority, application Germany, May 22, 1970, P 20 24 890.2

Int. Cl. B26b *17/00*

U.S. Cl. 30—180 **4 Claims**



A hydraulically actuated cutting machine for cutting round steel rods and the like having a stationary cutting member which coacts with a movable cutting member. A pump body has a shaft to which there is operatively connected a pumping member which pumps hydraulic fluid from the pump body into an adjoining cylindrical member. A piston, having a piston rod eccentrically extending therefrom, is slidably mounted in this cylindrical member. The piston rod terminates at the aforementioned movable cutting member. A cutting mouth housing is formed with an open recess, one wall of which faces the movable cutting member and forms the stationary cutting member. The housing adjoins the cylindrical member and defines a chamber which is in communication with the interior of the cylindrical member. The cylindrical member in turn is in communication with the pump body via a passage which is selectively sealed by valve means which coact with the piston.

3,733,700

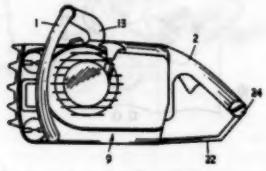
DUAL GRIP HANDLE FOR POWER TOOLS

John Arthur Notaras, and Angelo Lambrinos Notaras, both of 15-21 Reynolds Street, New South Wales, Australia

Filed Aug. 19, 1970, Ser. No. 65,001

Int. Cl. B27b *17/02*; F16f *16/08*

U.S. Cl. 30—381 **7 Claims**



A dual grip handle for power tools, the grip comprising two components flexibly connected together and each adapted for flexible connection to the power tool.

3,733,701

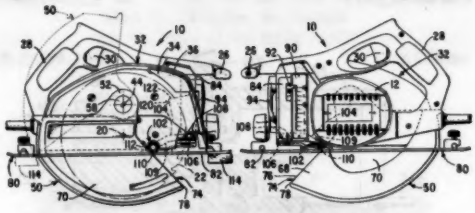
LOWER GUARD FOR CIRCULAR SAWS

Joseph P. Lubas, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,946

Int. Cl. B27g *19/04*

U.S. Cl. 30—391 **2 Claims**



A lower guard for circular saws having an adjustable base plate carrying a fixed stop continuously to engage the lower guard prior to the introduction of a workpiece, thus, to prevent complete closure of the lower guard. The stop and a cam surface of the leading edge of the lower guard coact increasingly to shift a front portion of the leading edge below the base plate as the same is lowered relative the lower guard.

3,733,702

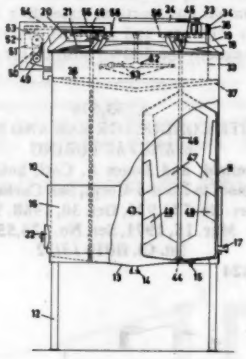
CHEESE VATS

Peter Struan Robertson, and Raymond Bysouth, both of Palmerston North, New Zealand, assignors to New Zealand Dairy Research Institute, Fitzherbert, Palmerston North, New Zealand

Filed Aug. 23, 1971, Ser. No. 173,965

Int. Cl. A01j *25/02*

U.S. Cl. 99—462 **20 Claims**

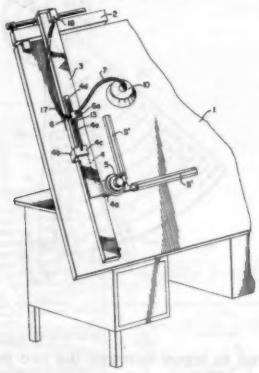


A cheese-making vat including a vertical tank, a plurality of agitators having shafts journalled in bearings mounted on the tank, the agitators having vertical blades arranged so as to effectively sweep almost all the volume of the tank, a wire cutter frame arranged to cover the cross-sectional area of the tank and having apertures positioned to receive the cross-sectional area of the agitator blades and their shafts when the agitators and their shafts are stopped a drive assembly arranged to move the cutter frame, a variable speed drive arranged to drive the agitator shafts a switch arranged to stop rotation of the agitators before the cutter frame is lowered prior to coagulation of the milk and subsequent cutting of the coagulum by raising the cutter within the tank.

3,733,703
DRAFTING BOARD ATTACHMENTS

Ruth Ann Smith, 22 McArthur Dr., Jacksonville, N.C.

Filed July 20, 1972, Ser. No. 273,453
Int. Cl. B43l *13/02*
U.S. Cl. 33—79 R 5 Claims



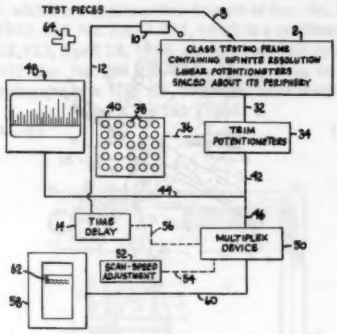
The drafting board has a drafting machine provided with a vertical track laterally movable across the board. A protractor support plate is vertically slidably mounted on the vertical track. A protractor head carrying vertical and horizontal scales is mounted on the lower portion of the support plate, the support plate having a narrowed extension track disposed parallel with and spaced from the vertical track, and the extension track having a longitudinally disposed keyway therein. A lamp support base is adjustably mounted on the extension track in way of the keyway. A swingable lamp support tube has one end fixedly mounted on the lamp base, the tube carrying at its other end a reflector carrying a lamp. And a transformer is mounted on the vertical track and connected to a source of electrical power. The transformer having leads extending therefrom and through the lamp support tube to the lamp, whereby the lamp may be fixedly adjusted into close proximity to the protractor head to always illuminate the head while eliminating shadows on the vertical scale as the protractor head is shifted vertically or horizontally across the drafting board.

3,733,704
METHOD AND APPARATUS FOR DETERMINING CONTOURS OF OBJECTS, ESPECIALLY OF GLASS

Aloysius W. Farabaugh, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 858,713, Sept. 16, 1969, abandoned. This application July 23, 1970, Ser. No. 57,576
Int. Cl. G01b *3/38*
U.S. Cl. 33—174 L 17 Claims

Contours of objects are determined by using equipment comprising a frame, generally conforming to a predetermined contour, a plurality of infinite-resolution linear potentiometers (preferably cermet) connected to the frame, a histogram-type visual-display device, a plurality of trimming potentiometers operatively associated such that there is one for each of said linear potentiometers and the outputs of the trimming potentiometers are connected to the visual-display device, and preferably also a checking tool. Desirably but not necessarily, there are also provided a strip-chart recorder, and a multiplex-scan and filter circuit leading from the inputs to the visual-display device and to the strip-chart recorder, whereby there may be produced a series of traces indicative of the contour of the piece tested. The equipment disclosed will check contours of pieces shaped from flat glass, such as backlights, to an accuracy of about 0.001 inch at high production rates (above five pieces per minute), yet the equipment is simple, does not require calibration against a perfect master, is readily set up,

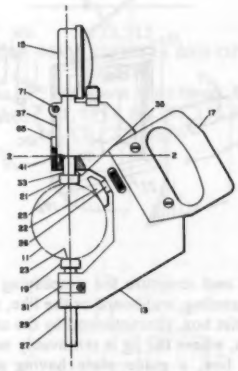


and is readily adapted for use with a different frame to permit inspection of lights of glass of different size and/or shape.

3,733,705
MEASURING DEVICES HAVING MEANS TO CONTROL THE MOTION OF THE FREE SPINDLE

Gary Powell Avalear, Highland, N.Y., assignor to Topper Corporation

Filed Nov. 4, 1971, Ser. No. 195,617
Int. Cl. G01b *5/02*
U.S. Cl. 33—147 R 8 Claims



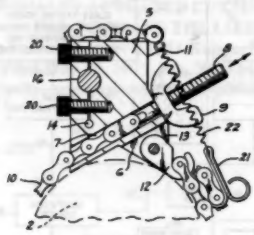
Measuring devices of the type having opposed spindles which define the measuring range space, such as snap gages and the like, are provided with a motion control means which selectively controls the motion of the movable or sensitive spindle to make presetting of the device to a reference master more simplified and convenient. To this end, a rotatable member is provided for the measuring device which is disposed so that one end thereof coacts with a recess provided in the movable, or sensitive, spindle so that when the rotatable member is in a first position movement of the sensitive spindle is prevented and when the rotatable member is in a second position the sensitive spindle is allowed a desired amount of movement.

3,733,706

MACHINE ALIGNING DEVICE

Arthur M. Blohm, 7901 Leonora, Houston, Tex.

Filed July 15, 1970, Ser. No. 55,073
Int. Cl. G01b 3/38
U.S. Cl. 33—180 R 1 Claim



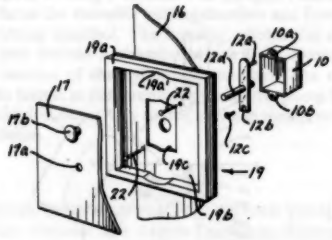
A machine aligning device for aligning a driving and a driven shaft, having means for mounting a block on a driving shaft, and adjustably anchoring said block in place, and a transverse shaft extending from said block on which a gauge is mounted.

3,733,707

METHOD AND APPARATUS FOR CUTTING OPENINGS IN PANELING OR THE LIKE

William R. Nix, 200 South Tekoppel Avenue, Evansville, Ind.

Filed Jan. 29, 1970, Ser. No. 6,906
Int. Cl. G01b 5/14
U.S. Cl. 33—180 R 8 Claims



A method and structure for simplifying the cutting of an opening in paneling, wallboard or the like, as for access to an electrical outlet box, characterized by the use of a jig having a centering pin, where the jig is removably secured to the electrical outlet box, a guide plate having an opening which receives such centering pin, and a template surrounding the guide plate. After removing the guide plate, and with the use of a conventional router in combination with the template, an accurate opening for the electrical outlet box is readily achieved.

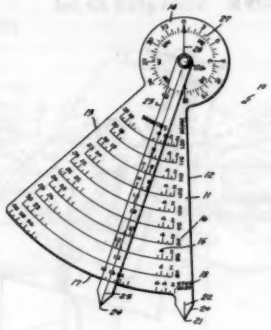
3,733,708

NAVIGATIONAL AID

Charles Jimmie Goodman, 1742 Temple Drive, Winter Park, Fla.

Filed Mar. 15, 1971, Ser. No. 124,287
Int. Cl. F26b 11/18; G01b 5/00
U.S. Cl. 33—355 1 Claim

A time, speed and distance computer apparatus having a prong fixed to a surface having indicia thereon and a second prong rotatably connected to the surface so that it can pass over the indicia. The two prongs can be placed on two points on the surface of a map for instantaneous determination of the time required to travel between the two points at predetermined speeds. The apparatus may also have a compass associated therewith for use in orienting the surface of the map, or the like.

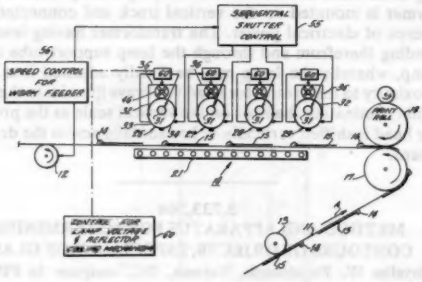


3,733,709

REFLECTOR AND COOLING MEANS THEREFOR

Robert W. Bassemir, Jamaica, N.Y., and Julius Robert Mayer, Waldwick, N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed May 6, 1971, Ser. No. 140,760
Int. Cl. F26b 3/28
U.S. Cl. 34—4 11 Claims



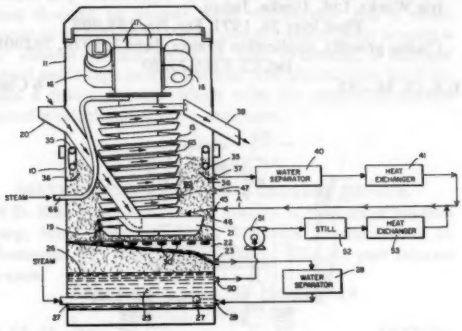
Printing apparatus utilizing lamps generating ultraviolet light to cure solvent-free ink by photopolymerization is provided with lamp reflectors having shutters to permit the lamps to remain energized while the printed work conveyor is stopped or is moving at a slow rate. A plurality of such lamps, each with an individual shutter, are arranged in parallel rows extending transverse to direction of movement of the work. As the shutters are closed, lamp voltage is reduced to a standby point where the lamps remain fired. Air is circulated at the same time behind the lamp reflector for cooling of the latter without appreciably cooling the lamp. Each reflector is a sheet of non-oxidizing metal mounted in the concave portion of a structurally strong housing. End reflectors prevent end scattering of the lamp-radiated energy and shield the lamp sockets from the heating effects of this energy. The lamp sockets are repositionable with respect to the reflector so that the arc thereof may be positioned generally along the focus line of the reflector for different positions of the focus line with respect to earth.

3,733,710

METHOD FOR DRYING METAL PARTS

Thomas J. Kearney, Detroit, Mich., and George F. Bieber, Arlington Heights, Ill., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed July 13, 1971, Ser. No. 162,186
Int. Cl. B01d 12/00; B08b 3/10
U.S. Cl. 34—9 3 Claims



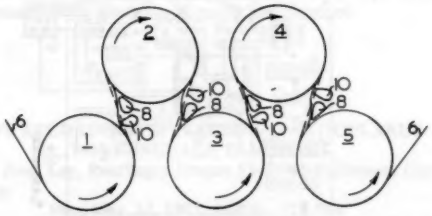
A method for removing water from metal parts, wherein the parts are introduced into a bath of a solvent which displaces the water from the parts, the parts then being conveyed upward on a spiral conveyor through saturated vapors of the solvent. The articles are then conveyed out of the vapor zone and are heated to completely dry them of all traces of the solvent.

3,733,711

APPARATUS FOR AND METHOD OF TREATING A WEB

James Haythornthwaite, Joliette, Quebec, Canada, assignor to Scapa Dryers (Canada) Ltd., Joliette, Quebec, Canada

Filed Sept. 7, 1971, Ser. No. 178,361
Int. Cl. B65b 17/28; F26b 13/08
U.S. Cl. 34—23 4 Claims



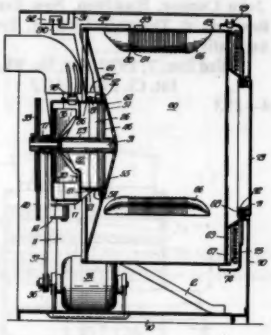
A web is treated, for example dried, by passing it around a rotary cylinder, and deflecting it by air pressure, positive and/or suction, applied to the web immediately adjacent the junction of the web and the cylinder to cause the web to contact a greater portion of the circumferential surface of the cylinder than it would in the absence of the air pressure.

3,733,712

CLOTHES DRIER HAVING MOISTURE SENSING CONTROL

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Division of Ser. No. 604,757, Dec. 27, 1966, Pat. No. 3,651,579, which is a continuation-in-part of Ser. No. 329,155, Dec. 9, 1963, Pat. No. 3,613,254, which is a continuation of Ser. No. 22,323, April 14, 1960, abandoned. This application Dec. 16, 1971, Ser. No. 208,832. The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.
Int. Cl. F26b 19/00
U.S. Cl. 34—45 13 Claims



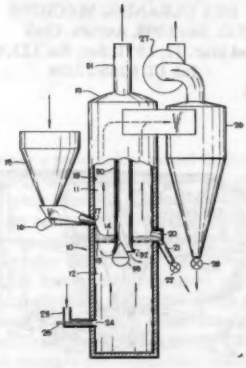
A control for a drying apparatus uses an electrical breakdown device, for example, a neon bulb, to generate a signal that actuates a relay when the articles sensed by electrodes attain a predetermined moisture content as determined by their electrical resistance. A timer motor is energized upon actuation of the relay to control the drying apparatus in one embodiment.

3,733,713

APPARATUS FOR PROCESSING A BED OF FLUIDIZED SOLIDS

Harry Williamson, Jr., 215 South Main Street, Benton, Ill.

Filed Apr. 21, 1971, Ser. No. 136,122
Int. Cl. F27b 15/00
U.S. Cl. 34—57 A 10 Claims



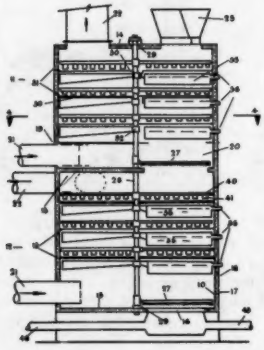
This apparatus includes a processing chamber and a heating chamber separated by a gas permeable partition adapted to

support a bed of solids. The solids are fluidized by an upwardly directed gas stream which processes the particles as they flow between the supply and discharge orifices of the processing chamber. An internally disposed gas handling conduit provides a by-pass stack for evacuation of the heated gas during emergencies and scheduled shut-downs. The gas handling conduit also provides a supply line for introducing blending air to the heating chamber to temper the hot gas stream during normal operation. A deflector distributes the blending air in a controlled pattern to the fluidized bed to provide optimum operating temperature conditions.

3,733,714
CASEIN OR THE LIKE DRYING MACHINES

Desmond John Connor, Hamilton, New Zealand, assignor to Mauri Brothers & Thomson Limited, Sydney, New South Wales, Australia

Filed Dec. 7, 1970, Ser. No. 95,688
Int. Cl. F26b *11/12*
U.S. Cl. 34—173 **3 Claims**

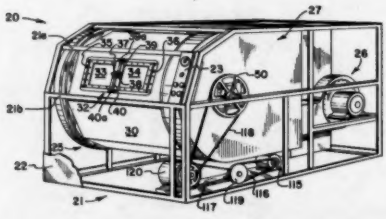


A casein drying machine has a pair of vertically superposed chambers, the upper feeding to the lower. Gaseous drying medium is fed to the bottom of each chamber, Screens with non-registering openings are superposed in each chamber and scrapers rotating about a central vertical axis sweep the screens so that the drying casein moves from top to bottom of the apparatus along a circuitous path including a plurality of gravity falls.

3,733,715
DRY CLEANING MACHINE

John H. Hales, P.O. Box 1008, Aurora, Utah

Filed Mar. 11, 1971, Ser. No. 123,170
Int. Cl. F26b *21/06*
U.S. Cl. 34—82 **18 Claims**

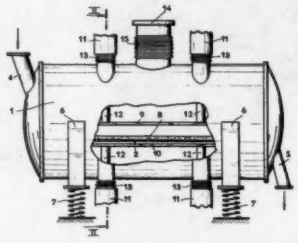


A dry cleaning machine that gently tumbles fabrics, furs, and other such materials with a dry cleaning compound to remove dirt from the materials and that efficiently removes the compound and dirt from the machine tumbler. A forced, circulating, air flow system is provided to aerate the materials and to assist in moving the cleaning compound through folds of the materials so that a maximum amount of dirt is contacted by the compound. Control means are provided to regulate the air flow and to prevent premature loss of the cleaning compound used.

3,733,716
LYOPHILIZATION INSTALLATION

Robert C. Bonteil, Clichy, France, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 28, 1971, Ser. No. 148,009
Claims priority, application France, June 2, 1970, 7020098
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **6 Claims**

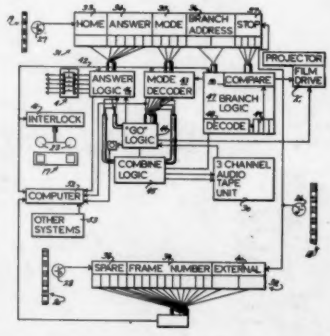


A lyophilization installation comprising a vacuum vessel having a plate rigidly fixed inside the vessel and upon which, in operation, a vibration bed is produced and particles of a product to be lyophilized are dried. Vibration means are provided and connected to the vessel for vibrating the vessel as a whole. The vacuum vessel is constructed to define, above the plate, an increasing flow cross-section for vapors liberated from the particles of the product.

3,733,717
AUTOMATED INFORMATION TRANSMITTING APPARATUS

Harold S. Montgomery, Milwaukee, and Alan F. Stevens, Oak Creek, both of Wis., assignors to David J. Nutting and Phyllis M. Nutting, both of Milwaukee County, Wis.

Filed June 29, 1971, Ser. No. 157,836
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 A **37 Claims**



A shutterless film projector projects from a film with an interlock track along one frame edge, and a clock track and a pair of data tracks laterally placed along the opposite frame

edge. Each film frame projects a question with a plurality of answers, selected by operation of corresponding switches. The clock track includes alternate transparent and opaque areas and the data tracks corresponding areas with appropriate transparent and opaque codes. The interlock track includes a pair of transparent areas aligned with a pair of light sensitive transistors with a film frame stopped in proper position. As the film moves, transistors serially read the data and clock tracks to actuate a pair of serial shift registers to accept the several data tracks. The first data track includes correct and incorrect answer logic, a mode determining logic, a frame address logic and next stop frame logic. This code information is interconnected through an answer input comparator and a mode decoder to a combination logic circuit to selectively actuate a "go" control for the projector, and, if desired, a multiple channel audio tape unit or the like. The second data track includes a frame number which with the particular answer selected is selectively fed to a computer.

3,733,718

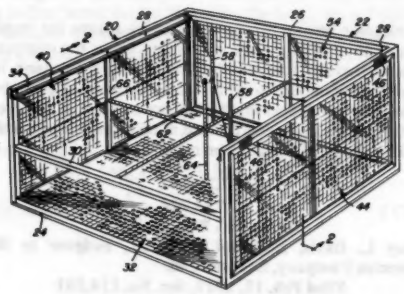
MATHEMATICAL DEMONSTRATION DEVICE

Fred D. Hill; Fred J. Hill, and Stanley L. Hill, all of Hattiesburg, Miss., assignors to R. A. Gray, Jr. and Frank D. Montague, Jr., both of Hattiesburg, Miss., a part interest to each

Filed July 23, 1971, Ser. No. 165,614

Int. Cl. G09b *23/04*

U.S. Cl. 35—34 **16 Claims**



A demonstration device incorporating an open frame mounting an XY plane, an XZ plane and two YZ planes. The planes are normally recessed so as to define a central demonstration area. Alternatively, the XY plane, XZ plane and one YZ plane can be oriented coplanar to each other. Point locating strings and rods, as well as a trigonometric function demonstration attachment in the nature of a compass pivotally mounting radially extending arms are also provided.

3,733,719

TAPE RECORDER FOR TEACHING, PARTICULARLY FOR LANGUAGE TEACHING

Erich Josef Ley, Reutlinger Strasse 51, D-71 Heilbronn, Germany

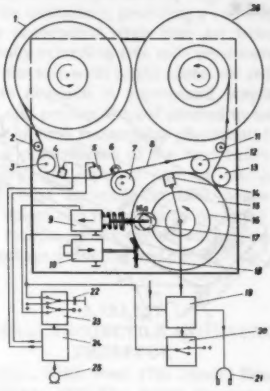
Filed Mar. 31, 1971, Ser. No. 129,706

Claims priority, application Germany, Apr. 2, 1970, P 20 15 671.2

Int. Cl. G09b *5/04*

U.S. Cl. 35—35 C **7 Claims**

Tape recorder for teaching utilizing a tape having a track for recordal of a student's voice. The recorder has spaced-apart recording and reproducing heads for the student's track. A tape guiding disc carries this reproducing head and is rotatable by the tape during recordal of the student's voice to increase the spacing between the recording and the reproducing heads. The disc can be automatically arrested on completion of a recording which is then immediately reproduced as the tape travels past the stationary reproducing head.



3,733,720

ORRERY

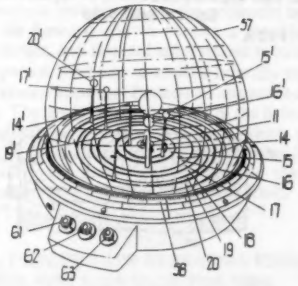
Edward Victor Byers, 17 Cavendish Crescent, The Park, Nottingham, England

Filed Jan. 22, 1971, Ser. No. 108,813

Claims priority, application Great Britain, Jan. 29, 1970, 4,262/70

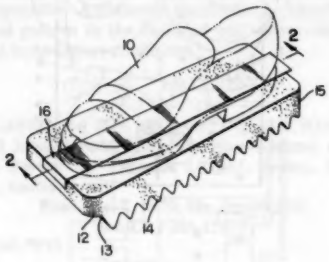
Int. Cl. G09b *27/02*

U.S. Cl. 35—45 **8 Claims**



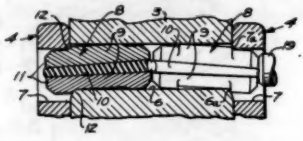
An orrery, being a mechanical model demonstrating movements of planets in their orbits around the sun, comprises a central sun-carrying member, a plurality of annular planet-carrying members nested one within another and individually rotatable about the central member, and a driving mechanism for driving the annular members at different rotational speeds, which mechanism comprises three sets of friction wheels rotatable respectively about three axes which are radial to and spaced apart about the rotational axis of the annular members, wherein each set consists of a wheel for each annular member, each said wheel engages and supports a circular track on the associated annular member, a plurality of wheels in each set have differing diameters and the tracks for them are concentric and have differing diameters and are disposed at appropriately different levels, and at least one of the sets is driven.

3,733,721
RESILIENT PAD FOR USE ON FOOTWEAR
Philip M. Clemens, 1835 Pemberton Drive, Fort Wayne, Ind.
Filed May 17, 1971, Ser. No. 143,786
Int. Cl. A43b 13/04
U.S. Cl. 36—32 R 2 Claims



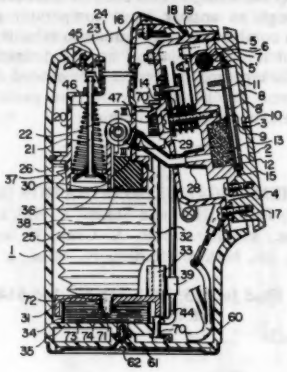
The specification discloses a resilient pad, for example, foamed elastomeric material with the pad being generally contoured for mounting on the bottom of an article of footwear, such as a shoe, or the like. The pad is provided with pressure sensitive adhesive on the upper side so that it can be adhered to the bottom of an article of footwear to provide a cushion, while the pad can readily be removed from the article of footwear when desired.

3,733,722
DUAL DIGGING TOOTH RETAINER
Richard L. Launder, 1540 South Greenwood Avenue, Whittier, Calif.
Continuation-in-part of Ser. No. 84,974, Nov. 12, 1970, abandoned. This application June 9, 1971, Ser. No. 151,454
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 3 Claims



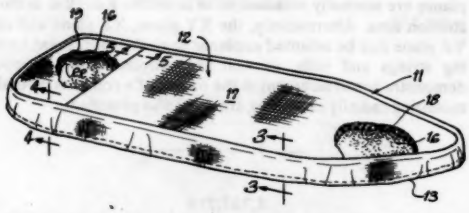
Dual retainer pins for a digging tooth, forming a socket having opposed holes in its sidewalls and arranged to fit over a mating holder having a cross bore positioned ta align with the opposed holes; each of the dual retainer pins comprizing a pair of complementary bars joined by a rubber body so that the bars may be compressed toward each other, and the pair of pins dimensioned to be disposed in the holder with their inner ends in abuttment and their extended ends projecting into the holes in the sidewalls of the tooth so that localized force is applied adjacent their extended ends tending to cause the pins to assume wedge shapes by causing their extended ends to compress and their abutting ends to expand. Also contemplated is a removing tool insertable between closely spaced teeth and including a wedge element operated driving pin engageable with one retainer pin to force the other pin free while placing the first pin wholely within the bore of the holder.

3,733,723
STEAMER
Shigeru Takakuwa, Suita; Kenichi Iwami, Kawanishi, and Mitsuo Ide, Takaishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 31, 1972, Ser. No. 285,219
Claims priority, application Japan, Sept. 7, 1971, 46/69440; May 17, 1972, 47/58026
Int. Cl. A47j 51/00
U.S. Cl. 38—69 14 Claims



A steamer having pressure imparting means for imparting pressure to a flexible tank containing water for compressing the tank thereby forcedly feeding water in the tank into a vaporizing chamber, in which steamer manual push button means are provided so that steam can be ejected and ejection of steam can be ceased as desired in response to the manipulation of the manual push button means.

3,733,724
IRONING BOARD PAD
Harvey L. Davis, Highland Park, Ill., assignor to Bishop Freeman Company, Evanston, Ill.
Filed Feb. 11, 1971, Ser. No. 114,581
Int. Cl. D06f 81/14, 83/00
U.S. Cl. 38—140 4 Claims



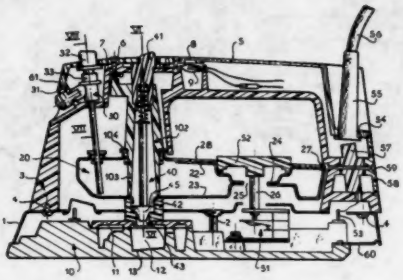
An ironing board pad is provided having a cover portion, shaped and sized to cover the upper surface of an ironing board, and a skirt portion to attach the pad to an ironing board. The cover portion comprises an underlying resilient supporting layer, a portion of which is covered by layers to provide a good ironing surface and a portion of which is covered by layers to permit a hot iron to stand thereon for extended periods without a trivet. The layers of the ironing surface comprise an outermost stretchable knit material and an intermediate resilient flexible foam, the knit material being made of a blend of yarns, plated so that a heat-resistant yarn is predominant on its outer surface and a yarn of lesser heat resistance is predominant on its inner surface.

3,733,725

STEAM-GENERATING WATER-SPRAYING FLAT IRON

Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France

Filed Nov. 10, 1971, Ser. No. 197,447
Claims priority, application France, Nov. 4, 1970, 7043760; May 11, 1971, 7116992
Int. Cl. D06f 75/06
U.S. Cl. 38—77.5 11 Claims



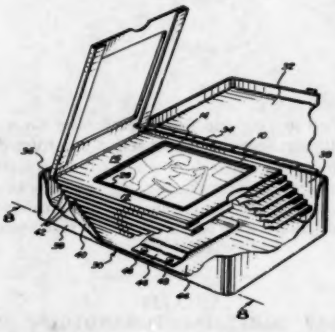
The present invention relates to a number of improvements in an iron of the steam-generating and water-spraying type. According to these improvements, there is essentially provided an elongated transparent reservoir extending over the whole length of the sole-plate, an unlosable plug fitted in a filling orifice bored in said reservoir, the latter being traversed by a moulded member bearing upon its lower face and containing a vapourizing device provided with a needle valve.

3,733,726

PHOTOPRINT HOLDER AND STORAGE CONTAINER

Herbert T. Nelson, 992 Mason Lake Drive, Grapeview, Wash.

Filed Aug. 25, 1971, Ser. No. 174,676
Int. Cl. B42f 13/00
U.S. Cl. 40—104.17 1 Claim



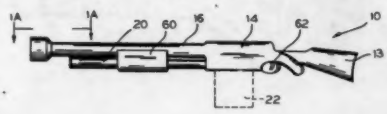
A rectangular frame, having a center picture opening therein, is provided for holding and storing wet photoprints of the type obtaining from Polaroid, or the like, cameras. All such photoprints, whether coated black and white or color, are originally wet and sticky. The frames for storing and holding such wet photoprints comprise spaced apart top and bottom rails, which are of U-shape in section and spaced end rails, said four rails forming a frame with a center picture opening and spaced apart top and bottom slots for slidingly receiving therein the edge portions of a photoprint. One of said end rails is provided with a stop to arrest sliding traveling movement of a photoprint therepast and the other end rail is provided with an opening permitting end grasping of a photoprint for sliding insertion or removal of the photoprint from the spaced apart slots. A storage container is provided for mounting said rectangular frames and is preferably provided with a shallow lid hinged to a top edge portion along the longest side of the containers, providing a convenient and stable support for photoprints while they are being coated, if desired. Diagonally extending side rails are secured to the inside surfaces of the side walls of the container and the rectangular frames are disposed in superposed, steplike relation, each having an end portion thereof pivoted to said side rails, the pivot means of each rectangular photoprint holder being spaced from the pivot means of the next below photoprint holder permitting free upward turning movements of a photoprint holder as respects the next below photoprint holder. Also, a refuse clip is preferably provided in a bottom portion of the receptacle for the stowing therein of refuse from the film package providing said photoprints.

3,733,727

NON-LETHAL PROJECTILE AND LAUNCHER THEREFOR

Kenneth W. Jones, 9512 West 47th Street, Brookfield, and Edward H. Richie, 4327 Elm Street, Downers Grove, both of Ill.

Filed Nov. 12, 1970, Ser. No. 88,687
Int. Cl. F41c 21/00; F42b 5/14, 11/18
U.S. Cl. 42—1 R 4 Claims



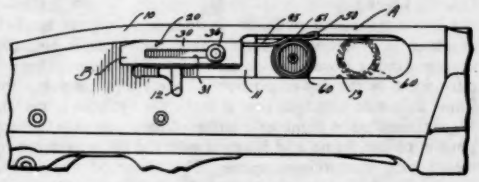
A non-lethal projectile and launcher therefor for riot control and the like comprising a body formed from a relatively soft, pliant latex material compressed to projectile form and mounted within a restraining cup which in turn is mounted in a firing shell. The body at its rearward end includes retracted guidance structure that extends on the projectile being fired, a chamber at its forward end to receive a marking fluid for marking the target, and internal subdivisions in its mid portion designed to permit the body to expand laterally on impacting into a soft textured mass that flattens on impact to avoid injury to the target. The projectile launcher is in the form of a barrel assembly including a bell shaped muzzle which permits the projectile to be fired without jamming even when held against the target and braking slots for discharging the propelling gases rearwardly of the launcher to reduce recoil.

3,733,728

SHELL CATCHER FOR REPEATING FIREARMS

John S. Kuslich, 1064 Arzyle St., St. Paul, Minn.

Filed Aug. 12, 1971, Ser. No. 171,235
Int. Cl. F41c 27/00
U.S. Cl. 42—1 R 6 Claims



A spent shell catching device for repeating firearms having compact means with a sliding fore and aft action whereby the

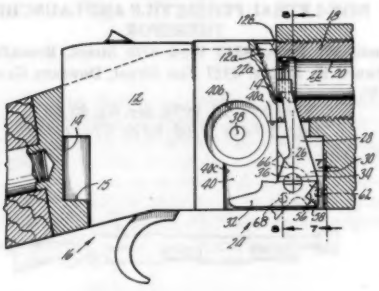
same may be placed in an inoperative position or in position to catch spent shells upon ejection from the receiver of the gun. Furthermore the invention comprehends the provision of the above shell cathcing means modified to the extent that the shell catcher can be used in shooting doubles in which the first shell is totally ejected and the second shell caught by the catcher mechanism which is automatically operated to catch the shell bolt action of the gun.

3,733,729

SHELL EXTRACTOR FOR FIREARM WITH FALLING BREECHBLOCK

Richard L. Baker, Hartford, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Jan. 12, 1972, Ser. No. 217,614
Int. Cl. F41c *15/08, 11/04*
U.S. Cl. 42—23 **4 Claims**



A firearm with a falling breechblock has a shell extractor loosely mounted upon a pivot structure in the receiver for pivoting movement between a first position and a second position, and for lateral tilting motion. The shell extractor occupies the first position in which it is adapted to engage the periphery of a chambered cartridge when the breechblock occupies its battery position. The shell extractor occupies its second position free from engagement with the periphery of the cartridge when the breechblock is in its retracted position. A cam arrangement is employed to tilt the extractor away from engagement with the cartridge during pivoting movement of the extractor from the first position to the second position so as to permit complete withdrawal of the cartridge from the chamber and subsequent insertion of a new cartridge. The cam arrangement may be adjusted to vary the tilt of the shell extractor in the second position so as to allow for a wider latitude in tolerances.

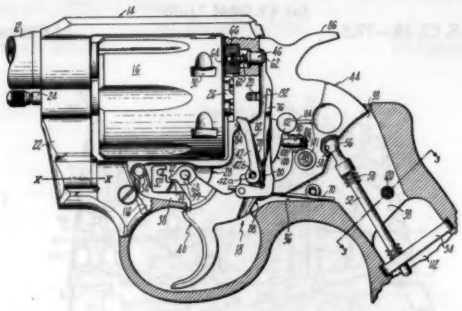
3,733,730

BY-PASS HAND CONNECTION

Richard L. Baker, Wallingford, Conn., assignor to Colts, Inc., Hartford, Conn.

Filed June 8, 1970, Ser. No. 44,311
Int. Cl. F41c *1/00*
U.S. Cl. 42—65 **3 Claims**

A revolver has a cylinder, including a by-pass ratchet, mounted for rotation within a frame. A trigger is pivotally mounted in the lower portion of the frame. A cylinder lock is positioned in the lower portion of the frame adjacent the frame and is so arranged that it locks the cylinder in certain trigger positions. A hammer is mounted for rotation in the rear portion of the frame and is urged into the firing position by means of a compression spring. The lower portion of the hammer is adapted to contact the trigger and move it to a rearward position during movement of the hammer from the firing position to the cocked position. A by-pass hand and a safety connector are pivotally mounted on the trigger on separate pivots. A leaf spring is interposed between the safety connector and the hand to urge the hand in the direction of the cylinder. The pin upon which the hand is mounted is significantly smaller than the mounting aperture on the hand. As the hammer is cocked the hand engages the by-pass ratchet to



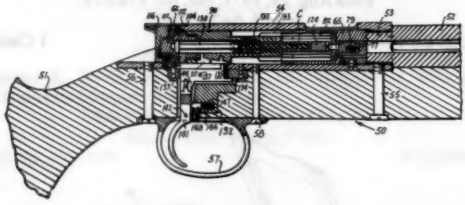
rotate the cylinder to a locked position. The trigger pull in the cocked position is substantially constant at all cylinder positions since the effects of the friction between the hand and the ratchet are not transmitted to the trigger because of the play in the connection between the trigger and the hand.

3,733,731

FIREARM WITH REMOVABLE LOCKING SYSTEM

Morris R. Nicholson, 2001 Yeager Drive, Longmont, Colo.

Filed Nov. 11, 1971, Ser. No. 197,853
Int. Cl. F41c *19/00, 11/00*
U.S. Cl. 42—69 A **9 Claims**



A simplified locking and firing mechanism for a firearm using metallic cartridges having an action constructed from a straight cylinder to transfer the pressure from the barrel to the rear section of the action. The locking and unlocking structure, the safety and striker, as well as the sear are combined in one assembly cooperating with a simple leverage assembly for the trigger.

3,733,732

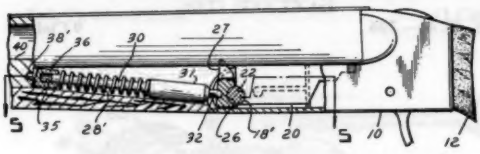
BARREL RETAINER FOR SHOTGUNS

Edward M. Stark, East Longmeadow, and Louis Elkas, Agawam, both of Mass., assignors to Emhart Corporation, Bloomfield, Conn.

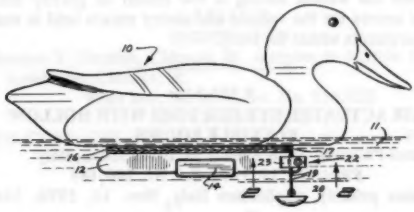
Filed July 12, 1971, Ser. No. 161,736
Int. Cl. F41c *27/00, 7/00*
U.S. Cl. 42—75 D **9 Claims**

Shotgun barrel retainer in which the barrel is pivotable about a hinge pin supported by the laterally spaced arm portions of the gun frame by means of a depending barrel lug disposed between the arms of the frame and having a semicylindrical recess engaged with the forward portion of the hinge pin. A coil spring urges the barrel outwardly to maintain the barrel lug firmly engaged with the hinge pin having at one

end a shoe or saddle member engaged with the cylindrical surface of the hinge pin opposite the barrel lug and being compressible between the hinge pin and a second barrel lug toward the fore-end of the barrel. A resilient leaf spring is carried on the hinge pin and is disposed between the frame and the barrel lug. The leaf spring, in combination with the coil spring and shoe member, serves to retain the barrel in fixed position on the frame and prevents undesirable relative motion therebetween when the barrel is pivoted to an open position.

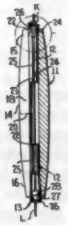


3,733,733
FLOATING BUOYANT OBJECT
Lewis L. Ruter, 218 26th Avenue North, Apt. No. 7, Minneapolis, Mich.
Filed Mar. 18, 1971, Ser. No. 125,542
Int. Cl. A01m *31/06*
U.S. Cl. 43—3 **8 Claims**



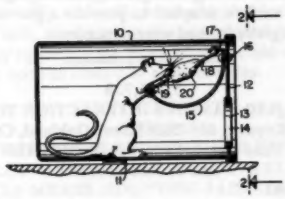
A floating buoyant object such as a duck decoy having an anchor and an attaching anchor line. Resilient line-holding clip means are provided whereby the length of the anchor line may be adjusted. Means are provided on the object for the storage of reserve anchor line.

3,733,734
QUICK-CHANGE SLIP-FLOAT
Jimmie H. Hysaw, 302 Summit Avenue, Lawton, Okla.
Filed Oct. 1, 1971, Ser. No. 185,773
Int. Cl. A01k *93/00*
U.S. Cl. 43—44.9 **10 Claims**



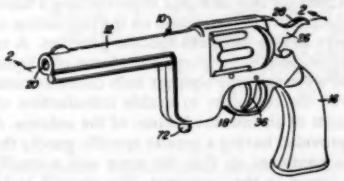
A quick-change slip-float and particularly a novel connector for quickly attaching and detaching fishing elements (floats, bobbers, sinkers, etc.) to a fishing line while precluding fouling and/or snagging of the line when in use. The connector includes one or more generally tubular sleeves slit from end to end along their entire length, a plug having a longitudinally extending bore defined by an internal unbroken peripheral surface, and means for removably fastening each plug in internal telescopic relationship to an associated sleeve. The bores are adapted to guide a fishing line centrally of the sleeve spaced away from the slit thereof to prevent fish line fouling and/or snagging when the sleeves are positioned telescopically internally of opposite ends of slit and bored floats, bobbers, etc.

3,733,735
ANIMAL TRAP
Clifford Burton Hirsch, Wukupumu Road, Woodbury, Conn.
Filed Jan. 19, 1971, Ser. No. 107,687
Int. Cl. A01m *23/18*
U.S. Cl. 43—61 **7 Claims**



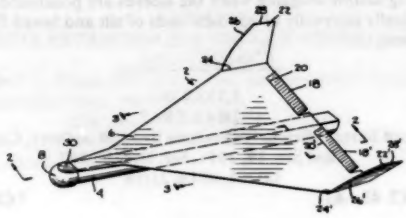
An animal trap for vermin has a container with an end wall containing an opening. A spring closed door within the container seals the opening when bait, fixed behind the door, is attacked. The door may be held open by link members connected between the end wall and the door, the link members being joined by a hard bait so that the devouring of the bait releases the link members and the door springs closed.

3,733,736
BUBBLE BLOWING TOY GUN
Lee S. Glessner, Sr., 2829 Eoff St., Wheeling, W. Va.
Filed Oct. 6, 1971, Ser. No. 187,086
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **10 Claims**



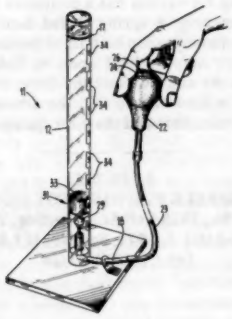
A bubble producing device including a walled reservoir for a bubble producing liquid, and also an intermittently operable compressed gas jet producing structure disposed outward of the reservoir with liquid conveying structure operatively associated with the walled reservoir for selectively conveying measured quantities of liquid from the reservoir to a position for acting upon by the gas jet producing structure.

3,733,737
TOY AIRPLANE
Harold Goodman, 590 Ocean Avenue, Long Branch, N.J.
Filed Jan. 14, 1972, Ser. No. 217,826
Int. Cl. A63h 27/00
U.S. Cl. 46—79 8 Claims



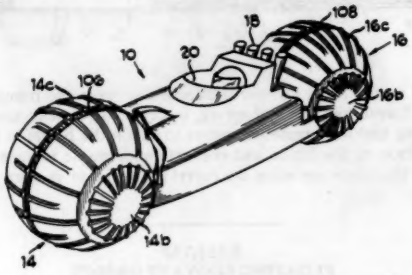
A toy airplane having a single section fuselage with a flattened upper surface adapted to provide a glue surface for a flattened integrally formed wing structure.

3,733,738
LIQUID-GASEOUS INTERACTION TOY
Frederick J. Kramer, 686 28th Street, Oakland, Calif.
Filed Oct. 7, 1971, Ser. No. 187,420
Int. Cl. A63h 23/00
U.S. Cl. 46—91 5 Claims



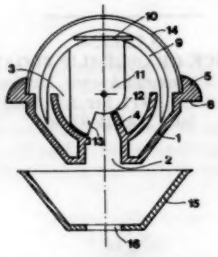
A toy that tests the skill of a user in performing a function is described which relies for operation on the interaction of various substances having different specific gravities. A tubular container is provided for supporting a column of a liquid such as water, and a syringe-type squeeze bulb communicates with the bottom of the container to enable introduction of controlled amounts of air into the bottom of the column. A capsule is also provided having a greater specific gravity than the liquid in the container so that the same will normally sink through the liquid in the container. The capsule includes a chamber for capturing air which has been introduced into the container. Since air is a gas and has a lower specific gravity than the liquid, it will tend to rise within the column. By controlling the amount of air introduced into the liquid for capture by the capsule, a user of the toy can control the movement of the capsule. That is, the user can slow the descent of the capsule by introducing a small amount of air, suspend the capsule at a prescribed location within the liquid by introducing a specific greater amount of air, and reverse the direction of the capsule by introducing more air.

3,733,739
MOTOR OPERATED TOY VEHICLE
Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 30, 1971, Ser. No. 214,022
Int. Cl. A63h 17/00
U.S. Cl. 46—206 9 Claims



A toy vehicle which is capable of mobility on a solid surface or through a liquid medium, and which is possessed of self-righting capability, characterized by the provision of forward and rear driven spherical wheels and an intermediate body between the wheels having a low center of gravity with a power source for the vehicle and motor means held in sealed compartments within the body.

3,733,740
AIR ACTUATED EYE FOR TOYS WITH HOLLOW FLEXIBLE BODIES
Giovanni Palumbo, Viale Faenza 10, 20142 Milan, Italy
Filed Nov. 19, 1971, Ser. No. 200,487
Claims priority, application Italy, Nov. 19, 1970, 31955 A/70
Int. Cl. A63h 29/16
U.S. Cl. 46—44 3 Claims



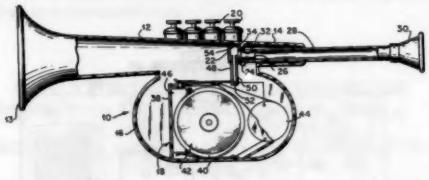
A new artificial eye for puppets or toys made of rubber or other non-rigid hollow plastic material, comprises a hollow body of frusto-conical configuration with a duct in the middle, which has a rectangular configuration in the upper part. The artificial pupil is a circular portion located in the middle of a hollow spherical cap serving as the ocular globe. When the puppet is pressed, air enters the duct, is brought into recesses located in diametrically opposed position on the edge of the hollow body by a deflector, strikes a projection on an extension piece placed in the duct and displaces the pupil. When the pressure is released, the air makes the deflector rotate the pupil in the opposite direction.

3,733,741

CHILD'S MUSICAL TOY

William J. Pipa, New Hyde Park, N.Y., assignor to Dicker International, Inc., New York, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,046
Int. Cl. A63h 5/00
U.S. Cl. 46—175 AR 11 Claims



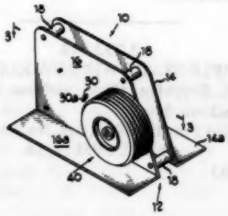
A child's toy musical instrument simulating the form of a real wind instrument and incorporating a battery-operated toy phonograph, including a grooved record on which music played on the real instrument is reproduced. The body of the toy includes a tube portion with a mouth piece at one end and a plug slidable within the tube under the pressure of air blown into it through the mouth piece. The electrical circuit of the phonograph includes a normal open switch positioned to be closeable by the plug when moved under pressure of breath blown into the mouth piece.

3,733,742

INERTIA TOY

Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 214,023
Int. Cl. A63l 11/10
U.S. Cl. 46—202 5 Claims



A launching and racing type toy characterized by the provision of a frame having a crank arm, intermediate gears and a driven rotatable spindle having a threaded portion thereon; and a wheel having a threaded interior for mating with the spindle thread.

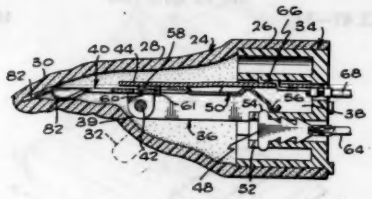
3,733,743

DOLL HAVING GRASPING HAND AND ELECTRICAL MEANS ACTUATED THEREBY

Joseph Kossoff, Hawthorne; Ronald R. Liedtke, and Joe W. Young, both of Redondo Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed June 18, 1971, Ser. No. 154,453
Int. Cl. A63h 33/26
U.S. Cl. 46—228 9 Claims

A doll with a hand that can be forced to close or open by directly bending the doll fingers, and which thereafter remains closed or open. The hand includes a resilient flesh-colored shell, a frame extending within the palm region of the shell, and a lever pivotally mounted on the frame at the front of the palm region and extending into the finger region. An overcenter spring arrangement maintains the lever extending straight ahead to keep the hand open, or bent to keep the hand closed. In one doll whose eyes are illuminated when the hand is operated, an electrical contact coupled to the lever in the hand touches another electrical contact only when the lever is



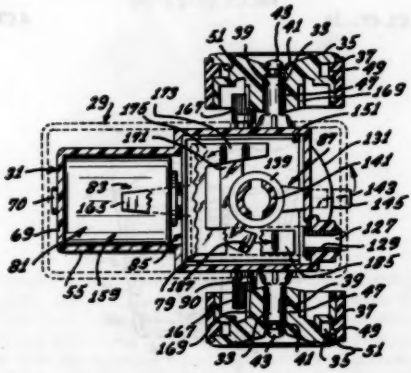
intermediate the extreme positions to which it is urged by the spring arrangement. This assures that the batteries, which energize a lamp that lights up the eyes, are not depleted if a child aCcidentally leaves the hand completely open or closed. In another doll, an electrical contact located in the hand can be closed by squeezing the hand, which a child can do as holds the hand to open or close it or at other times.

3,733,744

POWER MODULE FOR DRIVING VEHICLE-PROPELLING ELEMENT, INCLUDING STATIONARY AXLE MEANS MOUNTING SAID ELEMENT

John P. Hiltpold, Manhattan Beach, and George Soulakis, North Hollywood, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 9, 1972, Ser. No. 224,821
Int. Cl. A63h 29/22
U.S. Cl. 46—243 E 9 Claims



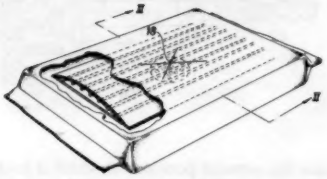
A completely self-contained power module for supplying rotational power to drive wheels, tractor tracks, airplane propellers, and the like, of miniature toy vehicles, the module including in a single housing a rechargeable battery, an electric motor with a drive shaft, switch means for electrically connecting the battery to the motor, a non-rotating axle integrally a part of the module's housing and disposed at a fixed relationship to the motor's drive shaft for rotatably carrying the driven wheels, etc., and a means for providing recharging current to the battery, preferably including means for disconnecting the motor from the battery circuit during charging.

3,733,745

GERMINATION AND SEEDLING PROMOTING UNIT

Sven Ingerstedt, Asbro, and Max Paabo, Norrkoping, both of Sweden, assignors to Hasselfors Bruks Aktiebolag, Skyllber, Sweden

Filed Mar. 30, 1971, Ser. No. 129,552
Claims priority, application Sweden, Apr. 1, 1970, 4463/70; Apr. 1, 1970, 4464/70
Int. Cl. A01c 1/04
U.S. Cl. 47—37 10 Claims



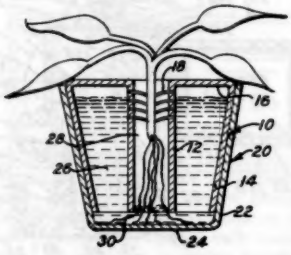
The present germination and seedling promoting unit includes an envelope containing a piece of preferably compressed moisture absorbing material such as peat for holding the seed or seeds. The bottom side of the envelope is provided with holes for absorbing ground moisture. The top surface of the envelope is provided with passage means for the growing seedling. Between the passage means and the seed or seeds there are provided mechanical protection means as well as evaporation protection means which are preferably formed as a web on a piece of tape, portions of which are taped to the peat to locate the protection means between the seed and the passage means.

3,733,746

SELF FEEDING FLOWER POT

William G. Allen, Jr., 2329 Tuscora Road, Bon Air, Va.

Filed July 29, 1971, Ser. No. 167,175
Int. Cl. A01g 27/00
U.S. Cl. 47—38 4 Claims



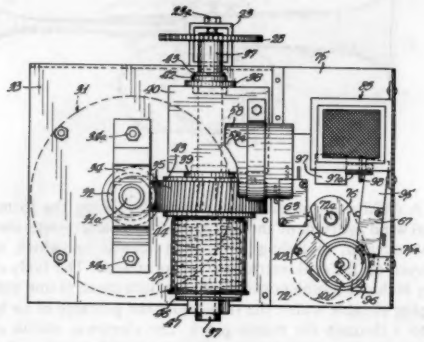
A flower pot having an imperforate core that includes an annular inner wall that forms a tube in which a plant is received, an annular outer wall that in conjunction with the inner wall forms a reservoir for a nutrient solution and a top wall that extends between the inner and outer walls. The pot also has an imperforate jacket that includes a floor that extends below and across the bottom of the core and an annular wall that extends upwardly of the floor and is outwardly of and in close proximity to the outer wall of the core. A passage between the floor and the bottom of the inner wall enables the nutrient solution to flow from the reservoir to the bottom of the tube.

3,733,747

DOOR OPERATING MECHANISM

Edward I. Fox, Chicago, and Raymond J. Fullem, North Riverside, both of Ill., assignors to H. W. Crane Company, Maywood, Ill.

Filed Mar. 1, 1972, Ser. No. 230,628
Int. Cl. E05f 15/20
U.S. Cl. 49—30 13 Claims



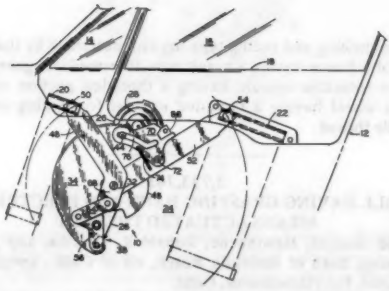
This invention relates to a door operating mechanism for moving a door in opening and closing movements in response to actuation of a selectively operable door operating switch. The door operating mechanism has an electric drive motor which is reversibly operated under the control of reverse and forward motor control switches to respectively open and close the door at a selected rate. The door operating mechanism is characterized by the provision of an electric timer, operated under the control of the door operating switch, and a cam mechanism driven by the timer at a speed related to the selected rate of door movement for operating forward and reverse motor control switches to control the mode and duration of door movement.

3,733,748

MULTIPLE STAGE WINDOW REGULATOR

Max O. Heesch, Brooklyn, Mich., assignor to Hancock Industries, Inc., Jackson, Mich.

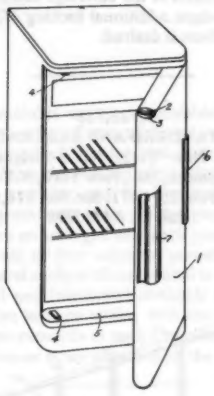
Filed Dec. 16, 1971, Ser. No. 208,556
Int. Cl. E05f 11/38
U.S. Cl. 49—103 15 Claims



A window regulator for sequentially operating two, substantially coplanar, separate, window panels slidably mounted within an automobile door, one of the window panels constituting a small vent, and the other window panel constituting a primary side window. Single operating means for both window panels, which is either manual or motorized, actuates the regulator mechanism through two consecutive stages of

operation whereby movement of the regulator in a single direction first fully operates one window panel through its full range of adjustment, and upon such panel adjustment being completed, then operates the other panel through its adjustment range. The regulator includes a gear segment and a lever pivotally associated with each window panel. Lost motion means interconnecting the gear segment and the levers produces the sequential window regulation, and locking means are utilized with the levers to lock the window panels in desired terminal conditions.

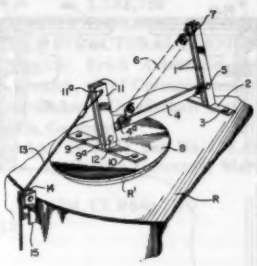
3,733,749
DEVICE FOR THE ARTICULATION OF DOORS
Pedro Pere Parera, Calle Alba No. 3, Barcelona, Spain
Filed Jan. 25, 1971, Ser. No. 109,152
Claims priority, application Spain, Jan. 28, 1970, 155 717
Int. Cl. E05d *15/50*
U.S. Cl. 49—193 **2 Claims**



A door hingedly connected to a suitable frame structure by means of hinge structure for enabling the door to be swingably moved about the opposite side extremities of the door. A first pair of rotary bearings are mounted on the upper and lower ends of the door adjacent one extremity thereof, which bearings have arcuate slots therein which coact with arcuate projections provided on the frame and disposed for coaction with the first pair of bearings. A second pair of rotary bearings are mounted on the upper and lower edges of the door adjacent the opposite extremity thereof and include arcuate slots disposed for coaction with a further pair of arcuate projections mounted on the frame, whereby the door can be swingably moved about either extremity thereof.

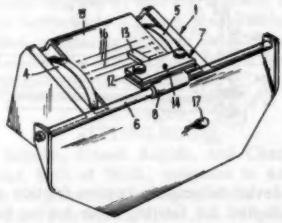
3,733,750
AIR RELEASE LID
Sanford L. Hege, R.D. No. 2, Chambersburg, Pa.
Filed Dec. 20, 1971, Ser. No. 209,714
Int. Cl. E05f *1/00*
U.S. Cl. 49—379 **4 Claims**

The air release lid for sealed silos has a bracket secured on the silo roof disposed radially inwardly of the opening therein. An arm is pivoted on the bracket adjacent the lower end thereof, the arm terminating at substantially the center of said opening. A spring connects the upper end of the bracket with the outer end portion of the arm for normally urging the arm to swing upwardly. A second bracket is disposed normal to the arm and fixedly secured intermediate its ends to the outer end of the arm. A lid of same shape as but larger than the opening is pivotally connected to the lower end of the second bracket; and a cable extends from the upper end of the second bracket radially across the silo roof and down the side of the silo and is



adapted to be locked when the cable is drawn taut, thereby maintaining the lid tightly seated across the opening.

3,733,751
METHOD OF AND APPARATUS FOR SHARPENING SMALL HAND TOOLS
Patrick Robert Williams, Misty Hill, Mt. Eliza, Victoria, Australia, assignor to Temtool Pty. Limited, Notting Hill, Victoria, Australia
Filed May 6, 1971, Ser. No. 140,909
Claims priority, application Australia, May 6, 1970, PA 1107/70
Int. Cl. B24b *3/38, 3/54*
U.S. Cl. 51—3 **6 Claims**

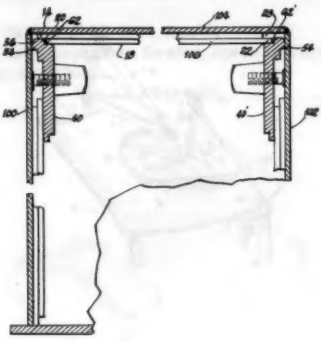


A grinder for tool blades having spaced coaxial grinding and stropping wheels, the stropping wheel being of smaller diameter than the grinding wheel, and a tool carrier movable along an axis parallel to the axes of the wheels. The angle made by a blade with the stropping wheel is greater than that made with the grinding wheel to remove the burr from the blade and provide a sharp edge thereon.

3,733,752
LINER ASSEMBLY FOR BLAST CABINETS AND ELEMENTS THEREFOR
Roger A. Johnson, Granger, Ind., assignor to The Wheelabrator Corporation, Mishawaka, Ind.
Filed Mar. 31, 1971, Ser. No. 129,794
Int. Cl. B24c *9/00*
U.S. Cl. 51—8 **13 Claims**

A new and improved liner system for use in blast cabinets and the like in which parts are subjected to surface treatment

wherein the linear assembly includes a universal liner panel in the form of a rectangular panel having structure for mounting



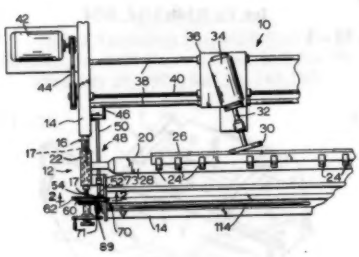
the panel to the walls of a blast cabinet and one or more corner liner panels adapted to be mounted on the lateral walls of a blast cabinet in an overlapping relation with the universal liner panel.

3,733,753

FRICTION CONTROL DEVICE

Robert C. Miller, 3350 Greenhill Road, Junction City, Oreg., and Gordon E. Stoddard, 2677 Friendly Street, Eugene, Oreg.

Filed Oct. 20, 1971, Ser. No. 190,786
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—34 E **10 Claims**



A control device selectively applies friction to a control mechanism adapted for feeding lathe knives in a grinding machine, whereby overrun of the mechanism or inaccuracy in its operation is substantially prevented. The control device is selectively locked out of its friction-applying position to allow rapid insertion and removal of knives.

3,733,754

BUFFING WHEEL AND CARTRIDGE

Bernard G. Jeske, 1614 Clay Avenue, Detroit, Mich.

Continuation of Ser. No. 648,717, June 26, 1967, abandoned. This application Jan. 26, 1970, Ser. No. 6,044
Int. Cl. B24d 9/02, 17/00, 11/00
U.S. Cl. 51—375 **11 Claims**

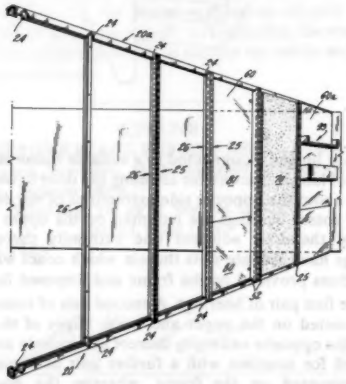
A buffing wheel consisting of a generally ring-shape body of buffing material, a ring-like clamping member of polygonal shape disposed coaxially within and attached to the body of buffing material, and a polygonal mounting hub disposed coaxially within the clamping member and formed of a resilient rubber-like material. A cartridge consisting of a plurality of such buffing wheels arranged in a side-by-side relation is semi-permanently mounted on a buffing spindle. Projecting fingers can be provided on at least some of the hubs extending into corresponding openings in others of the hubs so as to interlock adjacent wheels in the cartridge and flanged end hubs can be provided where additional locking of the end hubs to the clamping members is desired.

3,733,755

BRACKET STANDARD AND BASE RAIL SYSTEM

David R. Butler, New York, N.Y., assignor to Raymond Loewy/William Snaith, Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,828
Int. Cl. A47f 5/08
U.S. Cl. 52—36 **5 Claims**



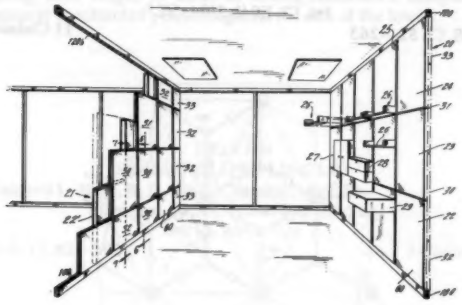
A modular partition comprising a plurality of modular panels, each supported between vertical posts which in turn are supported by and on a base rail. The vertical posts are so arranged that the modular panels may be hung therefrom by hooks along their vertical edges entering into appropriate slots in flanges on the post. The post, supported by a base rail, when arranged back to back, provides for a two sided wall; where the posts are supported on a rail so that they are not back to back, a single sided wall can be arranged which may be placed against an existing adjacent wall. The vertical posts not only provide means for suspending the modular wall panels, but also provide a channel with bracket support hooks on the inside of the channel from which modular furniture such as bookshelves having appropriate inter-engaging brackets may be hung and may be readily attached and removed.

3,733,756

MODULAR PARTITION SYSTEM

David R. Butler, New York, N.Y., assignor to Raymond Loewy/William Snaith, Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,871
Int. Cl. E04b 2/72
U.S. Cl. 52—36 16 Claims



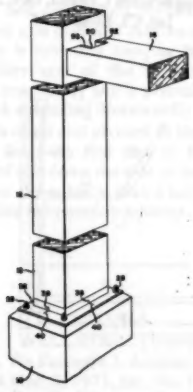
A readily assemblable and disassemblable wall or partition, consisting of a plurality of smooth faced rectangular panels, each providing interlocking elements at the rear thereof so that the smooth faces on each set of panels will together form one side of the partition and the interlocking faces of the panels will integrate both sides of the partition. The interlocking panels are so arranged that each panel interlocks four adjacent quadrants of four adjacent panels on the opposite side. The peripheral surface of each panel is so arranged that it provides vertical and horizontal channels between adjacent panels for utilities such as wiring with the wiring concealed and so that it also conceals in such channels mounting means for hanging shelves or other furniture on the walls.

3,733,757

CONCRETE BUILDING FRAME CONSTRUCTION

Norman L. Scott, Glenview, Ill., assignor to The Flexicore Company, Inc., Dayton, Ohio

Filed July 30, 1971, Ser. No. 167,677
Int. Cl. E04g 1/41
U.S. Cl. 52—105 11 Claims



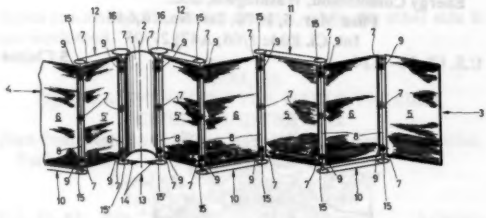
A building construction system which utilizes precast, concrete structural members and mechanical connectors. In the system precast columns are attached to a footer or other foundation with one type of connection while beams are attached to columns with a second type of mechanical connection. Preferably, the beam-column connection is also grouted after the mechanical interconnection is made.

3,733,758

MECHANISM FOR UNFOLDING ACCORDION-LIKE FOLDED STRUCTURAL ELEMENTS

Horst Maier, Munich; Erich Arbeitland, Ottobrunn, and Peter Kleber, Munich, all of Germany, assignors to Messerschmidt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Apr. 29, 1971, Ser. No. 138,451
Claims priority, application Germany, May 2, 1970, P 20 21 580.9
Int. Cl. B64g 1/10
U.S. Cl. 52—113 11 Claims



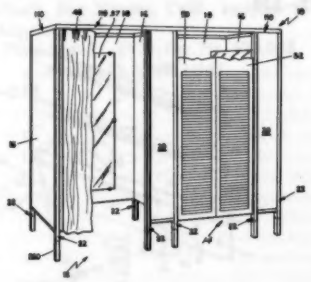
Mechanism for unfolding series-connected, accordionlike folded structural elements, particularly for use in supporting large surface solar cells. The several sections to be folded and unfolded are connected by hinge structure including a torsion-bar tensioned when said parts are in a selected on of folded or unfolded conditions. In addition, force transmission means are arranged between panels which rotate in the same direction during movement in response to the urging of said tensioned torsion bars. These force transmission devices ensure that said arm sections will unfold (or fold) at predetermined ratios with respect to each other, regardless of the effectiveness of successive individual torsion bars and will further ensure predeterminable response by said arm sections, even if certain of said torsion bars are out of action. If desired, a power means can be applied to operate through said force transmission means for restoring the arm sections against the force of said torsion bars to said selected condition.

3,733,759

FITTING ROOM

Donald W. Schulte, Grand Rapids, and Charles F. Logie, Spring Lake, both of Mich., assignors to American Store Equipment Corporation, Muskegon, Mich.

Filed July 26, 1971, Ser. No. 165,476
Int. Cl. E04h 1/12
U.S. Cl. 52—122 16 Claims



A fitting room assembly includes panel sides and posts, the latter having individual levelers which include a keeper plate

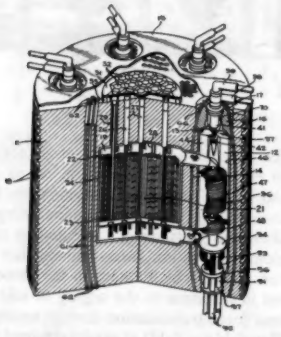
cocked angularly with respect to the posts so that its corners project beyond the post periphery to prevent feature strips mounted in the posts from sliding down beyond the ends of the posts. The levelers are encased by a sheath which is slidably positioned on the post. The tops of the panels and posts are covered by cornices which include an integral trackway for mounting draw curtains over the room opening. The cornices are open at their tops so that connector plates can be secured to adjoining panels which are cocked at oblique angles to one another rather than at right angles. The bottoms of the panels are covered by U-shaped caps having barbed legs for gripping the sides of the panels.

3,733,760

REACTOR VESSEL

Richard J. Koerner, La Jolla, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 5, 1970, Ser. No. 16,645
Int. Cl. E04c 1/06; A47j 27/08
U.S. Cl. 52—224 **5 Claims**



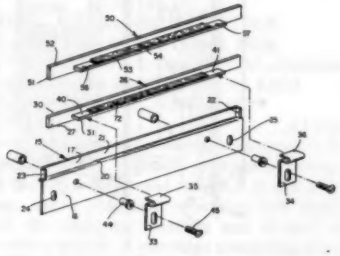
A concrete pressure containment vessel for a nuclear reactor is described wherein an access opening therein is sealed by a closure member. A plurality of tendons extend generally parallel with the axis of the access opening and are distributed about the access opening and pass entirely through the main portion of the pressure vessel and also through the closure member. The tendons are placed under tension to secure and seal the closure member in place and to prestress the remainder of the pressure vessel.

3,733,761

TRENCH DUCT END CLOSURE

John P. Casto, Vienna, W. Va., assignor to Textron Inc., Providence, R.I.

Filed Jan. 14, 1972, Ser. No. 217,898
Int. Cl. E04b 5/48; E04f 17/08
U.S. Cl. 52—220 **4 Claims**



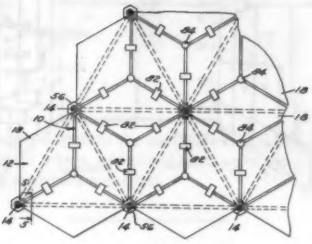
A member which extends across the end of a trench duct and closes off the same so as to secure the interior against the entry of concrete during a pour, the top of the member having a pocket which carries alternatively a filler piece during shipment or tile or carpet trim when the trench is installed.

3,733,762

BINARY PRECAST CONCRETE TRIANGULATED BUILDING SYSTEM

Jorge Pardo, 20181 Exeter, Detroit, Mich.

Filed May 18, 1971, Ser. No. 144,547
Int. Cl. E04b 5/04, 5/23
U.S. Cl. 52—263 **11 Claims**



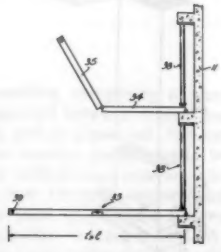
The invention relates to a prefabricated building structure utilizing precast concrete steel reinforced T-shaped building elements and precast concrete steel reinforced hexagonal shaped columns. The T-shaped building elements are arranged in building units to form the framework of the building structure, said units respectively constituting the floors and roof of the structure and being vertically aligned and spaced apart by means of the columns. Each building element comprises a diamond shaped slab and an integral beam extending along the major axis of the slab on the under side thereof. The hexagonal shaped columns are each provided with a plurality of vertically spaced annular shelves upon which the ends of the T-shaped building elements on the major axes thereof rest. Moment connections are welded in the field between adjacent slabs and between the building elements and columns.

3,733,763

MODULAR BUILDING AND SERVICE TOWER THEREFOR

Ernest R. Drucker, 86 Saginaw Crescent, P.O. Box 5105, Ottawa, Ontario, Canada

Filed Oct. 21, 1971, Ser. No. 191,510
Claims priority, application Canada, Oct. 26, 1970, 096530
Int. Cl. E04h 1/04
U.S. Cl. 52—126 **9 Claims**



A support and service tower is described for supporting a plurality of independent modular building units to form a multistorey building. The tower of the invention comprises a generally vertical column mounted on the ground and a series of cantilevered support means mounted on this column. The

support means are capable of assuming a retracted vertical position and an extended horizontal position for supporting independent modular building units.

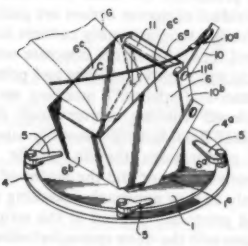
The cantilevered support means are preferably in the form of beams which are pivotally mounted on a horizontal support on the service tower and these can be swung from a vertical retract position against the service tower wall and a horizontal extended position for receiving and supporting a modular building unit. These beams can also contain additional hinges along their length to assist in folding them in a compact manner in retracted position against the side of the tower.

3,733,764

SEALED SILO FILLING LID

Sanford L. Hege, R. D. No. 2, Chambersburg, Pa.

Filed Dec. 20, 1971, Ser. No. 209,713
Int. Cl. E04h *7/22*
U.S. Cl. 52—192 **3 Claims**



The filling lid for sealed silos has a base plate adapted to close an inlet in the silo roof, the base plate having an opening therethrough registering with the silo inlet. A filling hopper is provided on the base plate around the opening, the hopper being open at its top to receive the usual gooseneck of a silage blower. A closure plate is hingedly mounted on the underside of the base plate adapted in operative position to cover the opening in said base plate in an airtight manner. Linkage is provided for swinging the closure plate into operative position, including a bell crank lever pivoted on the side of the hopper having one arm disposed substantially vertically when the closure plate is normally hanging freely in inoperative position. The other arm of the bell crank lever extends downwardly and rearwardly and is pivotally connected to the upper end of a link extending downwardly through a slot in the base plate with its other end pivoted to the closure plate. And a cable extends from the first arm of the bell crank lever across the silo roof and down the side of the silo and is adapted to be locked when the cable is drawn taut, thereby maintaining the closure plate in operative position.

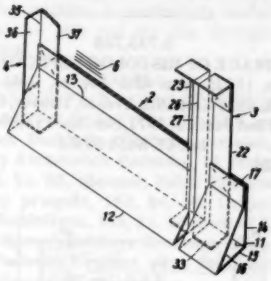
3,733,765

WALL STRUCTURES

Friedrich Bartels, Via Baraggie 3, Ascona, Switzerland

Filed Mar. 2, 1971, Ser. No. 120,133
Claims priority, application Germany, Mar. 7, 1970, P 20 10 933.5
Int. Cl. A63j *23/00*
U.S. Cl. 52—474 **13 Claims**

A component for the production of ornamental units, such as walls, having at least one flat blank of collapsible material of which one side is provided with stiffening or reinforcing elements consisting of a similar material, while the other side is not reinforced.

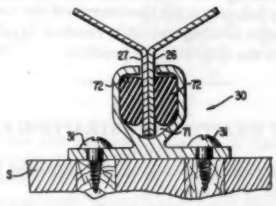


3,733,766

DECORATIVE FACING FOR WALLS, FACADES, CEILING AND THE LIKE

Jean-Paul Leclercq, 114 rue Jean-Jaures, 92-Boris-Colombes, Paris, France

Filed Dec. 7, 1970, Ser. No. 95,446
Int. Cl. G04d *1/34*; E04d *3/30*
U.S. Cl. 52—480 **3 Claims**



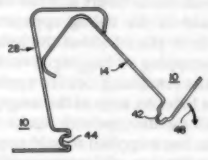
A profiled panel for broad structural surfaces constituted of a juxtaposition of elements of bent plates, characterized in that the said elements have at least two parallel edges and a surface bent along a line parallel to the said edges and having plural asymmetrical skirts, forming a polyhedron that the space between the edges is the same in all of the elements mounted in any one series and that the supports of the said elements are smooth or profiled, provided with known attachment fixtures, and attached to the surface to be paneled. The described panel is applied to walls, facades and ceilings, particularly to those of a theater, concert or movie auditorium.

3,733,767

INTERLOCKING PANEL ASSEMBLY

Darrel W. Craik, San Marcos, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

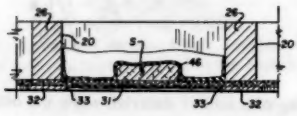
Filed Apr. 21, 1971, Ser. No. 136,048
Int. Cl. E04d *3/362*
U.S. Cl. 52—529 **10 Claims**



An interlocking panel assembly is disclosed in which each panel in the assembly includes a male flange section and a

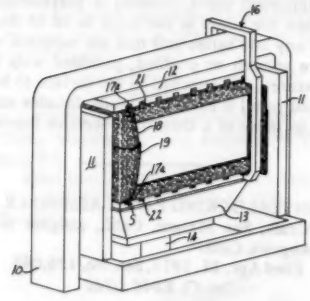
female flange section. The flange sections are configured such that, when assembled, an interlocked flange is provided which has a trapezoidal cross-section.

3,733,768
STORAGE OF HISTOLOGY SPECIMENS
Billy F. Carls, 15025 West 48th Avenue, Golden, Colo., and Paul R. Bell, 4825 East 18th Avenue, Denver, Colo.
Filed Feb. 12, 1971, Ser. No. 114,894
Int. Cl. B65b *63/08*
U.S. Cl. 53—25 **11 Claims**



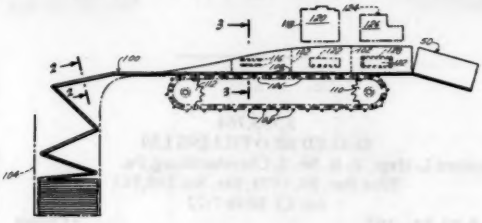
A storage tray for histology specimens which is formed as a rectangular sheet having rows and columns of compartments within the face of the sheet. The thickness of the sheet is selected to provide for compartment depths sufficient to receive the specimens. The floors of the compartments are porous to permit melted wax to flow through the compartments. The method of transferring the specimens from their wax embedments and to the compartments thus includes the steps of placing embedments above each compartment, melting the wax forming the embedments to permit it to flow through the tray but retain the specimens on the compartment floors. Subsequent cooling causes a residual layer of wax to harden to secure the specimens in position.

3,733,769
PROCESS OF WRAPPING AND STRAPPING BALES OF FIBERS
Donald W. Van Doorn, Columbus, Ga., assignor to Lummus Industries, Inc., Columbus, Ga.
Filed Dec. 29, 1971, Ser. No. 213,300
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 **4 Claims**



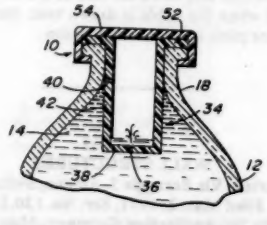
A time saving process of wrapping and strapping bales of fiber such as cotton, man-made fibers and the like. While the bale is held compressed in the baling apparatus such as a press, a first strap or tie is placed about the bale adjacent an end of the bale. The wrapping or bagging is tucked about the first applied tie while the remaining ties are applied starting at the opposite end of the bale. As soon as the wrapping is tucked about the first applied tie the operator tucks the wrapping about the tie which has been applied to said opposite end, allowing time for the application of the intermediate ties while the operator is tucking the bagging about said second tie, thus reducing the overall time required to secure the bale.

3,733,770
PROCESSOR'S METHOD AND APPARATUS FOR PACKING PHOTOGRAPHS
Arlen J. Erickson, Mercer Island, and Leonard H. Tall, Seattle, both of Wash., assignors to CX Processing Laboratories, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 26,723, April 8, 1970, abandoned. This application Mar. 3, 1971, Ser. No. 120,551
Int. Cl. B65b *43/00, 39/00*
U.S. Cl. 53—29 **11 Claims**



Items such as processed cut films and interrelated prints representing individual customer orders are packed in respective multi-leaf, flexible strip assembly carriers interjoined at a common edge and separable at the opposite and intervening edges for insertion and removal of films and prints received in the successive inter-leaf spaces. A packing method and apparatus are disclosed utilizing carrier stock comprising an elongated multi-leaf flexible strip assembly adapted, such as by a series of perforations therein, to be machine fed lengthwise in positive manner and the leaves of which spread apart progressively as they approach a packing station. There the cut films and prints are packed in the strip assembly by transverse insertion into the open spaces between the leaves in such timed relation with advancement of the strip assembly as to space the groups of interrelated items respectively in successive carrier-length sections of the strip assembly. Then the packed individual carrier-length sections are severed from the stock body for subsequent processing. In the preferred embodiment the carrier stock leaves, of material protective to the films and prints, are transversely scored and thereby weakened at carrier-length intervals along their lengths so as to permit severing the carrier-length sections by tearing. The face leaf is transparent so as to permit markings to be seen through it, and is of lesser width than an underlying leaf such that the latter's projecting edge may serve as a marking tab.

3,733,771
CLOSURE MEANS AND METHOD
William J. Megowen, Russell St., Carlisle, Mass.
Filed Mar. 11, 1971, Ser. No. 123,167
Int. Cl. B65b *7/28*
U.S. Cl. 53—37 **5 Claims**



A closure for fragile containers of gassy liquids having a depending volumetric member extending down into the interior

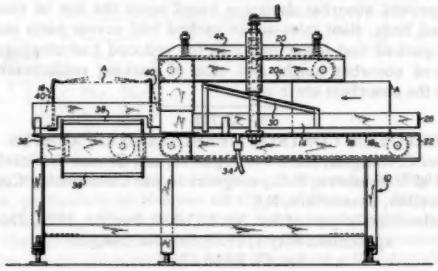
of the container to displace free gas from within the container, thereby substantially reducing or completely eliminating the chance of an explosion should the container be broken. The member occupies a volume such that when the container is filled with a usual amount of liquid either all free gas is purged by introducing the member or a small volume of free gas is left not exceeding the amount by which the liquid will expand if heated to the highest temperature normally expected to be encountered in use. The member is either a hollow, flexible walled body or composed of a cellular foam so as to be compressible under liquid thermal expansion forces to relieve excess pressure on the container, or is a hollow body provided with a small opening to admit liquid under expansionary pressures. The container is sealed by the member either in cooperation or in unitary construction with a cap.

3,733,772

AUTOMATIC CASE SLITTING AND FLAP FOLDING APPARATUS

Anthony J. Dichiara, 133-03 128th St., South Ozone Park, Queens, N.Y.

Filed May 21, 1971, Ser. No. 145,792
Int. Cl. B65b *61/06*
U.S. Cl. 53—167 **7 Claims**



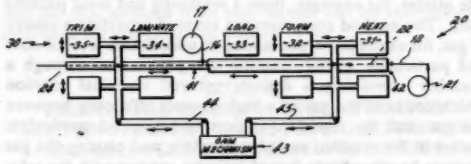
Apparatus for conveying in sequential order cases having hinged flaps in an open condition to a tab slitting unit for releasing said flaps, and then laterally conveying the cases to a flap folding unit for folding the flaps upwardly and inwardly into closed relationship.

3,733,773

APPARATUS INCLUDING RECIPROCATING WEB FEEDING MEANS FOR A CONTINUOUSLY FEEDING WEB

Joel A. Hamilton, Englewood, N.J., assignor to R. A. Jones & Company, Inc., Covington, Ky.

Filed May 27, 1971, Ser. No. 147,507
Int. Cl. B65b *1/02*
U.S. Cl. 53—184 **21 Claims**



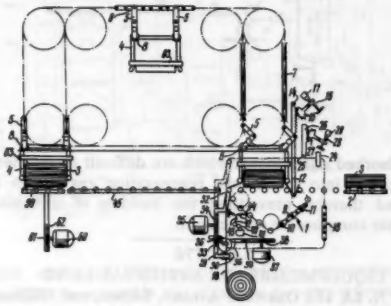
A blister packaging machine is provided with a pair of alternating reciprocating clamps which feed a web of sheet material in a continuous motion through the machine by alternately engaging the web by the clamps during the advancing portions of their strokes and transferring engagement back and forth between the clamps while the clamps are moving forwardly at the same velocity. The clamps are driven by a cam and cam follower mechanism linked to the clamps. A movable flat bed work station is supported for movement with one of the clamps and has a working member which works upon the sheet by a reciprocating stroke against the sheet. The actuation of the clamps, the motion of the clamps, and the timing of the actuation of the working elements is derived from the cam mechanism. The machine is particularly useful in forming blister packages for pills and the like through the use of reciprocating dies.

3,733,774

APPARATUS FOR PACKAGING STACKS OF FLAT ARTICLES INTO PACKAGES

Yakov Efimovich Duchinsky, Tbilissky pereulok, 3, kv. 19, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow; Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30; Grigory Iosifovich Zax, ulitsa Mechinikova, 14a, kv. 24, both of Kiev; Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6, and Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181, both of Moscow, all of U.S.S.R.

Filed Mar. 4, 1971, Ser. No. 120,842
Int. Cl. B65b *11/12, 41/14*
U.S. Cl. 53—232 **2 Claims**



An apparatus for packaging stacks of flat articles into packages, wherein the mechanism for wrapping the stack into a package having its vertical face ends open comprises an endless roller conveyor adapted to support thereon a stack to be packaged, and an openable frame mounted on a vertically closed conveyor, this frame being adapted to wrap the stack along the top side and two opposite vertical sides thereof into wrapping material, as the frame is put onto this stack. The bottom side of the stack has the wrapping material folded thereupon by means of the said endless roller conveyor.

3,733,775

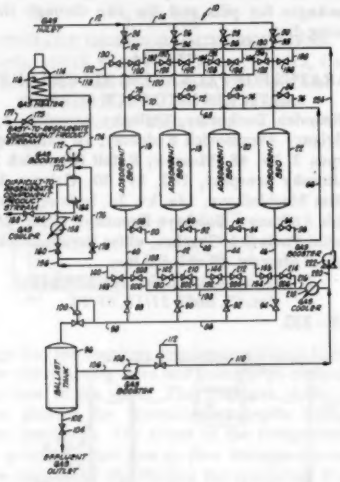
ADSORPTION PROCESS FOR RECOVERING ADSORBABLE COMPONENTS FROM A MULTI-COMPONENT GAS STREAM

Clem A. Barrere, Jr., Houston, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 14, 1971, Ser. No. 162,462
Int. Cl. B01d *53/04*
U.S. Cl. 55—28 **21 Claims**

By the present invention a cyclic adsorption process is provided for recovering adsorbable components from a multi-component inlet gas stream. One or more of a plurality of fixed beds of solid adsorbent are contacted with the inlet gas stream so that adsorbable components contained therein are adsorbed on the bed or beds. Simultaneously, one or more other of the bed or beds are contacted with a heated regeneration gas stream so that previously adsorbed components which are easy to regenerate are desorbed therefrom into said regeneration gas stream and recovered and one or more additional beds are contacted with a cooling gas stream so that the bed or beds are cooled. The flow patterns of the inlet gas stream, the regeneration gas stream and the cooling gas stream are continuously changed or cycled so that the bed or beds just contacted with the inlet gas stream are contacted with the heated regeneration gas stream thereby desorbing easy-to-regenerate components therefrom, the bed or beds just contacted with the cooling gas stream are contacted with the inlet gas stream and the bed or beds just contacted with

the heated regeneration gas stream are contacted with the cooling gas stream. Each of the beds is periodically contacted with a second heated regeneration gas stream so that previously adsorbed components which are difficult to regenerate are desorbed into the second regeneration gas stream and recovered thereby preventing the buildup of difficult-to-regenerate components on the beds.



3,733,776

LIQUID MEMBRANE ARTIFICIAL LUNG

Norman N. Li, 158 Oakwood Avenue, Edison, and William J. Asher, 12 Byron Lane, Fanwood, both of N.J.

Filed Sept. 16, 1970, Ser. No. 72,851
Int. Cl. B01d *53/22*; A61m ; C12b
U.S. Cl. 55—16 12 Claims

An artificial lung is created by contacting liquid membrane encapsulated, oxygen containing gas bubbles with blood. The oxygen permeates the membrane rapidly going into the blood. The CO_2 initially in the blood permeates the membrane going into the bubble where the initial CO_2 partial pressure is lower.

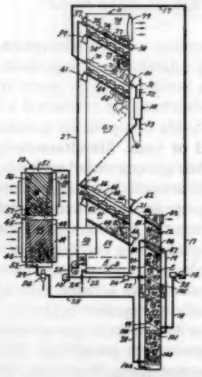
In this manner the blood is oxygenated and CO_2 is simultaneously removed.

3,733,777

FLUE GAS RECOVERY METHOD AND APPARATUS

Richard L. Huntington, Route No. 1, Van Buren, Ohio

Filed June 10, 1971, Ser. No. 151,759
Int. Cl. B01d *19/53*
U.S. Cl. 55—48 23 Claims



The invention is an improved process for the recovery of, for example, sulfur dioxide and heat from hot flue gas employing direct contact packed-bed heat exchangers, a packed bed absorber and desorber and packed bed liquid-liquid heat exchangers of improved design. The process utilizes the thermal energy of the hot flue gas to: desorb sulfur dioxide, preheat combustion air and to reheat absorber tail gas. The formation of a vapor plume and loss in stack gas draft is minimized by operating the absorber at low temperatures and by reheating the absorber tail gases.

Heat is extracted from the hot flue gas and cooled by direct contact with an immiscible heat transfer fluid in a packed bed. Moisture is condensed from the flue gas by direct contact with cold heat transfer fluid, and separated from the heat transfer fluid by decantation. Sulfur dioxide is absorbed from the cooled flue gas in a packed bed by direct contact with a cold aqueous sulfite solution to form a bisulfite salt solution. The aqueous bisulfite salt solution is thermally decomposed and the sulfur dioxide desorbed by heating through direct contact with hot heat transfer fluid from the initial flue gas cooling step. Heat is recovered from the stripped sulfite absorption solution by direct contact with heat transfer fluid and used to preheat combustion air.

The decomposition of the bisulfite solution during the sulfur dioxide desorption process is aided by the heat transfer fluid which contains an organic acid which is partially miscible with water at elevated temperatures.

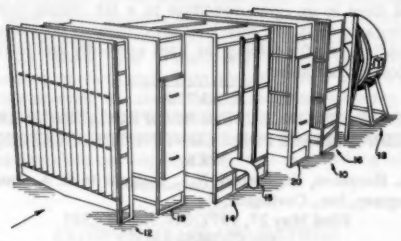
Improved absorber design is based upon the use of slant packed beds, slant inlet-outlet packed bed access parts and slant packed bed tower internals for reduced bed cloggage, reduced absorber height and ease of packing replacement while the absorbers are in use.

3,733,778

POLLUTION CONTROL METHOD AND APPARATUS

Ernest C. Hungate; Harold A. Ogletree, and Grason T. Nickell, all of Greensboro, N.C., assignors to Air Conditioning Corporation, Greensboro, N.C.

Continuation-in-part of Ser. No. 103,039, Dec. 31, 1970. This application May 1, 1972, Ser. No. 248,805
Int. Cl. B01d *47/06*
U.S. Cl. 55—89 9 Claims



A method of controlling the emission of odors and particulate matter, for example, from a rendering and meat packing plant. The method comprises the steps of providing a source of gas, for example air, containing an undesirable level of odor and particulate matter, causing the gas to pass through a chamber containing a densely sprayed chemical solution which contacts the gas at a high contact efficiency between the gas and the liquid to collect and suspend particulate matter in the solution and absorb odors, and causing the gas again to be placed into forced intimate contact with the solution while simultaneously separating the chemical solution from the cleansed gas. The method may also include the step of creating a uniform gas velocity prior to treatment, and, in an alternate embodiment, the gas may be subjected to a plurality of spraying treatments with the same or different solutions. The solutions may be acidic, basic, masking, oxidizing, neutralizing, or reacting. Specific solutions disclosed include solutions of water with sodium carbonate (soda ash), sodium bisulfite, sodium hydroxide, chlorine dioxide, potassium permanganate, and calcium hypochlorite. Chlorine gas may also be introduced into the air stream for the same purpose. The

method may also be practiced using a plurality of sequential treatments using different solutions in each of the plurality of subsequent stages.

3,733,779

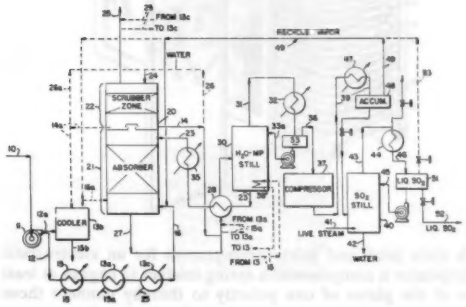
STRIPPING OF SULFUR DIOXIDE FROM GAS STREAMS BY USE OF N-ALKYL LACTAMS

Arthur A. Bellisio, Huntington Station, N.Y.; Hippocrates G. Psyras, Berkeley Heights, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 872,775, Oct. 30, 1969. This application Apr. 17, 1972, Ser. No. 244,766

Int. Cl. B01d *53/14*

U.S. Cl. 55—73 **36 Claims**



Sulfur dioxide is stripped from a gas stream by N-alkyl lactam, particularly an N-lower alkyl pyrrolidone, e.g., N-methyl pyrrolidone, sufficiently to permit the non-polluting discharge of the gas stream to the atmosphere. Gas streams containing from about 0.05 percent to about 10 percent sulfur dioxide by volume can thus be passed at a gas mass flow velocity of 200–3,000 lbs/hr/ft² through an N-alkyl lactam-containing contacting zone of 5–85 ft in length, to reduce the sulfur dioxide content thereof to less than about 250 ppm, advantageously to less than 100 ppm, or even 50 ppm, prior to discharge to the atmosphere. Gas streams having SO_2 contents of from about 0.01 percent to about 50 percent by volume can thus be treated to achieve at least about 90 percent SO_2 removal by volume, desirably at least about 95 percent, and advantageously at least about 98 percent removal. Gas temperatures of about 0°–75°C, preferably about 35°–65°C, are employed. Lactam entrained in the gas stream discharged from the contacting zone is conveniently recovered in a water scrubbing zone. Lactam from the contacting zone and lactam in water removed from the scrubbing zone can conveniently be recovered in a distillation zone by heating to 100°–200°C. The lactam recovered can be recycled to the contacting zone, and the SO_2 stripped from said lactam can be conveniently recovered for non-polluting disposal or use.

3,733,780

PROCESS FOR USING N-ALKYL LACTAM FOR STRIPPING SULFUR DIOXIDE FROM GAS STREAMS AND RECOVERING LIQUID SULFUR DIOXIDE

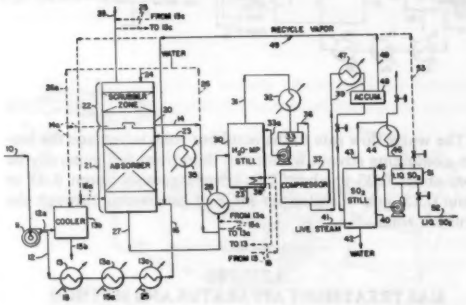
Arthur A. Bellisio, Huntington Station, N.Y.; Hippocrates G. Psyras, Berkeley Heights, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 872,775, Oct. 30, 1969. This application Apr. 17, 1972, Ser. No. 244,767

Int. Cl. B01d *53/14*

U.S. Cl. 55—73 **24 Claims**

Sulfur dioxide is stripped from a gas stream by N-alkyl lactam sufficient to permit the non-polluting discharge or use of the treated gas stream, the stripped sulfur dioxide being recovered as essentially pure liquid SO_2. A gas stream to be treated is passed through an absorption zone generally 5–85 ft in length and containing said lactam, e.g., N-lower alkyl pyrrolidone, preferably N-methyl pyrrolidone, at a gas mass flow velocity of about 200–3,000 lbs/hr/ft² at a gas temperature of 0°–75°C, preferably 35°–65°C, to reduce its SO_2 content to less than about 250 ppm, preferably less than 100 ppm, and/or to remove at least 90 percent by volume, desirably 95 percent and advantageously 98 percent or more, of its SO_2 content. The treated gas stream, together with entrained or vaporized lactam, is passed, prior to discharge to the atmosphere or other disposal or use, directly to a water scrubber zone in which at least about 90 percent by weight, advantageously at least about 98 percent and preferably at least about 99 percent of the lactam content is removed therefrom, permitting the gas stream to be discharged or otherwise disposed of



without undesired SO_2 pollution of the atmosphere and without an unacceptable loss of lactam. A water stream having recovered lactam therein from the scrubber zone and a lactam stream having SO_2 dissolved therein from the absorption zone are passed to a distillation zone in which SO_2 and at least a portion of the water content of said streams is removed overhead and a lactam-rich stream is recycled to the absorption zone, in which a solution of lactam having up to about 25 percent by weight of water is maintained. The SO_2-water overhead stream from the distillation zone is compressed and cooled to produce an aqueous solution of sulfur dioxide, said aqueous solution being heated in a second distillation zone to distill off the sulfur dioxide, which is thereafter condensed and recovered as an essentially pure liquid SO_2 product containing at least about 90–95 percent SO_2 by volume.

3,733,781

RECOVERY OF N-ALKYL LACTAMS EMPLOYED IN STRIPPING OF SULFUR DIOXIDE FROM GAS STREAMS

Arthur A. Bellisio, Huntington Station, N.Y.; Hippocrates G. Psyras, Berkeley Heights, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

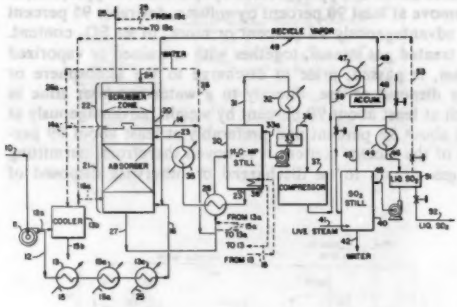
Continuation-in-part of Ser. No. 872,775, Oct. 30, 1969. This application Apr. 17, 1972, Ser. No. 244,762

Int. Cl. B01d *53/14*

U.S. Cl. 55—73 **15 Claims**

A gas stream from an absorption zone in which sulfur dioxide is stripped therefrom by N-alkyl lactam is passed to a water-containing scrubber zone at a gas mass flow velocity of 200–3,000 lbs/hr/ft² in a gas temperature of 0°–75°C, preferably 35°–65°C, wherein at least about 90 percent by weight, advantageously at least about 98 percent, preferably at least about 99 percent, of the lactam vaporized or entrained in the gas stream is recovered. The gas stream leav-ing the scrubber zone, with an SO_2 content of less than about 250 ppm and/or at least 90 percent of its SO_2 content stripped therefrom, can be discharged to the atmosphere or otherwise disposed of without unacceptable loss of lactam. A water stream having the thus recovered lactam dissolved therein is removed from the scrubber zone and may be passed directly

into the absorption zone or to a distillation zone from which a lactam-rich liquid stream can be recycled to the absorption zone. The scrubber zone will generally have a length of from about 2 ft to about 25 ft, typically from about 3 ft to about 15



ft. The water flow rate to the scrubber zone to replace the lactam-containing stream withdrawn therefrom will generally be from about 0.05 to about 2.0, advantageously about 0.05 to about 0.25, gals of water per MCF of gas passing through the scrubber zone.

3,733,782

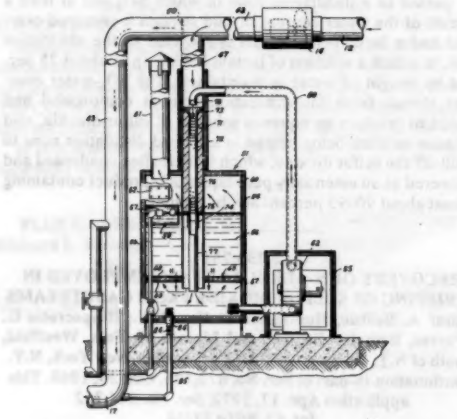
GAS TREATMENT APPARATUS AND METHOD

Charles Lee Hatchel, Rte. 12, Box 604M, Fort Worth, Tex.

Filed May 11, 1971, Ser. No. 142,217

Int. Cl. B01d 47/02

U.S. Cl. 55—95 **7 Claims**



A treatment plant for polluted air or gas includes a water tank having a vertical inlet conduit communicating with the upper end of the tank. The tank is divided into upper and lower water chambers by a transverse filter assembly. In the inlet conduit, the gas is wetted from a spray nozzle and then directed through filtering elements to remove solid particles prior to being discharged into a lower chamber of the water tank. The gas is further purified in passing through the water, in the lower and upper water chambers, and through the filter submerged assembly. The gas to be treated may be received from building enclosures, or may be received from intake stacks collecting polluted air from particularly contaminated outside areas such as city streets.

3,733,783

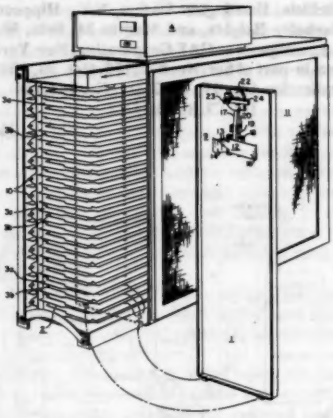
ELECTROSTATIC PRECIPITATOR

Ivan T. Burney, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,764

Int. Cl. B03c 3/66

U.S. Cl. 55—104 **6 Claims**



A door latch and safety arrangement for an electrostatic precipitator is comprised of a spring contact to engage at least one of the plates of one polarity to thereby connect those plates to a first grounded terminal of a high voltage power supply when the door is in place and the latch is in the locked position. A test button is arranged so that when it is momentarily depressed and while the latch is locked, the spring contact is also moved towards the plates that are connected to the second terminal of the power supply and charged with the other polarity to thus produce an audible spark indicating the charged condition of the plates. When the latch is moved to the unlocked position, switch means connected therewith de-energizes the power supply. Moving the latch to the unlocked position also moves the spring means to simultaneously connect together precipitator plates of opposite charges and thus short circuit the collector cell and eliminate any residual charge therein.

3,733,784

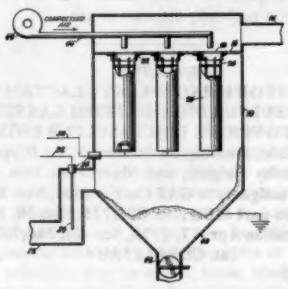
ELECTRO-BAG DUST COLLECTOR

William M. Anderson, and John R. Dervay, II, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,743

Int. Cl. B03c 3/80

U.S. Cl. 55—117 **2 Claims**



A filter arrangement that first imposes an electrostatic charge upon all particulate matter carried by a stream of gas

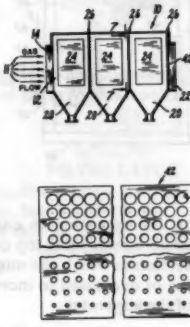
to be filtered. A charge of similar polarity is placed upon the filtering means whereby the particulate matter having a like charge is repelled therefrom to permit only the dust-free carrier gas to pass therethrough.

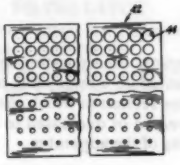
3,733,785

GAS FLOW REGULATION FOR ELECTRIC PRECIPITATORS

Charles A. Gallaer, Palmyra, Pa., assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Feb. 4, 1971, Ser. No. 112,541
Int. Cl. B03c *3/36*
U.S. Cl. 55—129 **21 Claims**





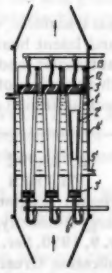
A horizontal, dry-type electric precipitator is provided with one or more gas flow diverter units located between the inlet and outlet and extending across the precipitator chamber to increase the gas flow near the top of the chamber relative to the flow near the bottom. Each diverter unit is constituted by, for example, resistance baffles spaced to leave graded openings, an orifice plate with graded openings, or baffles inclined at graded angles. Where more than one diverter unit is provided, the gradation of succeeding units is such as to provide a higher gradation of flow rate, the farther downstream the unit is located.

3,733,786

AEROSOL PRECIPITOR

Volodimir Petrovich Koka, ul. Kikvidze 3, Kv. 10, Kiev, U.S.S.R.

Continuation of Ser. No. 764,803, Oct. 3, 1968, abandoned.
This application July 19, 1971, Ser. No. 164,032
Int. Cl. B01d *47/00*
U.S. Cl. 55—222 **11 Claims**



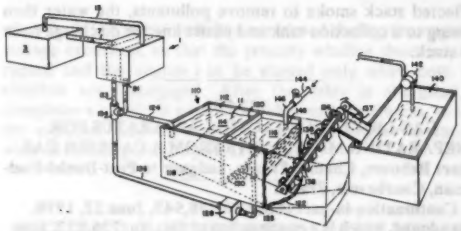
An apparatus for precipitating aerosol particles comprises at least one pair of tubular elements placed one inside the other and forming an annular working space. The inner tubular element is connected to a source of steam or liquid to be evaporated and is made porous to enable penetration therethrough of the steam or liquid to be evaporated into the working space. The outer tubular element is maintained at a temperature below that of the inner tubular element and rotary motion is imparted to the aerosol flow in the annular working space by means of rotary blades.

3,733,787

METHOD, APPARATUS AND SYSTEM FOR SEPARATING PARTICULATE MATTER FROM GASES LADEN THEREWITH AND ACCUMULATING THE PARTICULATE MATTER

Truman Winningham, Monta Vista, Calif., assignor to Truman Smog Control, Inc., San Francisco, Calif.

Filed Jan. 31, 1972, Ser. No. 222,228
Int. Cl. B01d *47/00*
U.S. Cl. 55—228 **7 Claims**



A method, apparatus and system for separating particulate matter from gases laden therewith and for accumulating the particulate matter including apparatus for separating the particulate matter from the gases. The gas-particulate matter separating apparatus comprises means forming a first chamber adapted to receive a quantity of separating liquid having a predetermined specific gravity and having a gas inlet port in an upper portion thereof; means forming a second chamber adapted to receive a quantity of said separating liquid and having a gas exit port in an upper portion thereof; means forming a liquid conveyor passage communicating an intermediate portion of said first chamber with an intermediate portion of said second chamber; a sludge discharge port communicating with the lower portion of said second chamber; and conveyor means operative to mix particulate matter and gases entering said first chamber through said gas inlet port with liquid in said first chamber and to convey said mixture through said liquid conveyor passage into said second chamber wherein the gases and particulate matter are gravity separated with the gases exiting through said gas exit port and the particulate matter precipitating toward the bottom of said second chamber and toward said sludge discharge port.

3,733,788

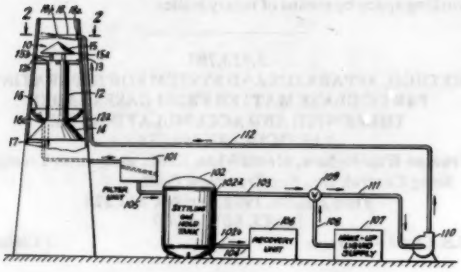
APPARATUS FOR REMOVING PARTICULATE AND GASEOUS POLLUTANTS FROM STACK SMOKE

William A. Crowley, 8418-52 Avenue, Elmhurst, N.Y.

Filed May 10, 1972, Ser. No. 251,941
Int. Cl. B01d *47/06*
U.S. Cl. 55—228 **10 Claims**

Apparatus for cleaning a stack smoke by removing particulate and gaseous pollutants therefrom, having a conduit in the stack for conducting the stack smoke therethrough and a conical deflector spaced above and across the top of the conduit to

provide an annular passage for the stack smoke and a nozzle to deliver a curtain of water transversely to the direction of the



deflected stack smoke to remove pollutants, the water then flowing to a collection tank and outlet line for discharge from the stack.

3,733,789

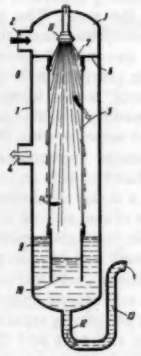
GAS-LIQUID CONTACTING APPARATUS FOR SEPARATING MICROMISTS FROM A CARRIER GAS

Albert Rebours, Chatou, France, assignor to Prat-Daniel-Poelman, Courbevoie, France

Continuation-in-part of Ser. No. 48,943, June 22, 1970, abandoned, which is a continuation of Ser. No. 736,832, June 13, 1968, abandoned. This application Mar. 13, 1972, Ser. No. 233,886

Int. Cl. B01d *47/00*

U.S. Cl. 55—233 **4 Claims**



A gas-liquid contacting apparatus particularly adapted for the separation and precipitation of microparticulate liquid micromists from a carrier gas comprising filters made of filter cloth through which the gas is forced to pass. The filters are preferably of tubular or bag-like form and may consist of single or multiple filter cloth layers, if required, with felted or tangled fibers placed as intermediate layer between two filter cloth layers. The filters are attached to the gas inlet compartment by specific collars which permit rapid removal and exchange. By providing a special extension piece or counterweight at the lower part of the filter a gas seal is formed at the bottom of the apparatus housing. The filters are continuously provided during filtration with a liquid washing layer forming a microsieve for intercepting the liquid micromists contained in the carrier gas.

3,733,790

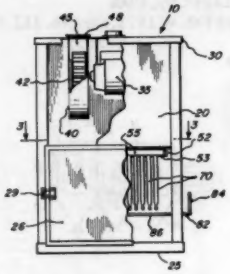
FILTERING APPARATUS

Leo A. Pierce, St. Paul, Minn., assignor to The Torit Corporation, St. Paul, Minn.

Filed Feb. 11, 1971, Ser. No. 114,537

Int. Cl. B01d *49/00*

U.S. Cl. 55—324 **3 Claims**



A filtering apparatus incorporating an enclosure having a motor blower mounted on a removable top cover of the same and a bag type filter section in which the number of bag type filters may be increased or decreased to increase or decrease the filtering capacity of the apparatus.

3,733,791

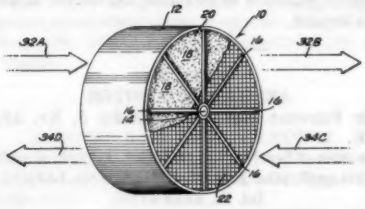
HEAT TRANSFERER

Konstantins Dravnieks, Madison, Wis., assignor to Wehr Corporation, Milwaukee, Ill.

Filed Aug. 13, 1971, Ser. No. 171,500

Int. Cl. B01d *53/16*

U.S. Cl. 55—390 **9 Claims**



A rotary air-to-air heat transferer, which is capable of transferring both sensible and latent heat from one air stream to another, includes a heat transfer media comprised of a lattice-like support coated with a thin film of an aqueous solution of a hygroscopic material such as lithium chloride.

3,733,792

FILTERS

Roland Taylor, Egremont, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 9, 1970, Ser. No. 27,034

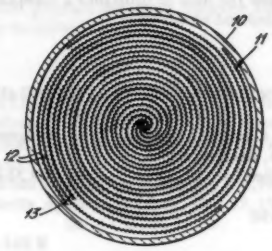
Claims priority, application Great Britain, Apr. 17, 1969, 19,786/69

Int. Cl. B01d *25/04*

U.S. Cl. 55—488 **2 Claims**

A filter for a liquid aerosol comprising knitted wire mesh with a surface of a material not wetted by the aerosol, arranged in layers and rolled into a cylindrical spiral, a minor

proportion of the layers of wire mesh being of coarser wire than the remainder of the layers and being disposed between

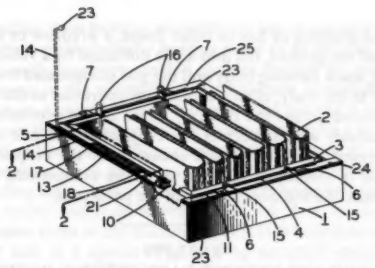


layers of the remainder. The invention finds application in the filtering of blanket gas in sodium-cooled nuclear reactors.

3,733,793
FILTER LATCH

George W. Young, Fern Creek, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 22, 1971, Ser. No. 191,862
Int. Cl. B01d *27/08*
U.S. Cl. 55—493 **5 Claims**



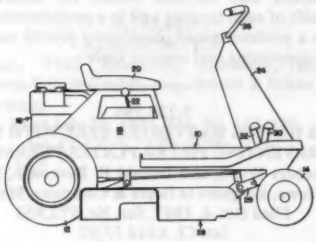
A filter latch including a pair of opposed latch members pivotally mounted to a flow-through housing, the latch members being adaptable for being received by a filter unit wherein base portions of the latch members are pivotally connected to the housing and an arm portion of each latch member is adaptable for engagement with an opposing arm portion of the opposing latch member, the base portions of the latch members including inwardly extending tabs adaptable for engagement with the filter unit, the arm portions of the latch members being pivotable in interlocking coextensive side by side relation.

3,733,794
SAFE STARTING SYSTEM FOR LAWN AND GARDEN EQUIPMENT

David Thomas Allen, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Mar. 22, 1972, Ser. No. 236,908
Int. Cl. A01d *75/18*
U.S. Cl. 56—10.5 **9 Claims**

A riding mower has an internal combustion engine with a magneto type ignition system. A mower is suspended from the tractor and driven from the engine through a belt drive, which includes a clutch, while the traction wheels are driven through a different drive system, which also includes a clutch. A pair of series connected switchs are respectively connected to the clutches, so that they are open when the clutches are engaged, and closed only when the clutches are disengaged. The ignition system generates a sine wave voltage in the primary winding, the positive voltage excursion being utilized to generate the high voltage spike in the secondary winding which fires the spark plug. However, the positive voltage excursion in the primary coil can be shorted to ground through a diode and a relay, when the relay is de-energized. The relay is energized

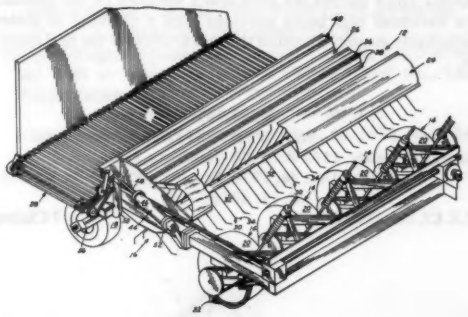


when both the safety switches are closed during the negative voltage excursion, so that the primary winding short is interrupted and the engine can be started only when both the clutches are disengaged. After the relay is energized, it completes a circuit in parallel with the safety switches, so that the clutches may be engaged once the engine is started without shorting out the primary winding.

3,733,795
BEET TOPPING AND WINDROWING APPARATUS AND KNIFE ORIENTATION MEANS THEREFOR

Joseph C. Rabb, Boise, Idaho, and Larry W. Miller, Fort Collins, Colo., assignors to Heath Farm Equipment Inc., Fort Collins, Colo.

Filed Sept. 24, 1971, Ser. No. 183,553
Int. Cl. A01d *23/02*
U.S. Cl. 56—121.45 **12 Claims**



An improved beet topping and windrowing apparatus of the trail-mounted type having a substantially reduced turning radius. The reduced turning radius is achieved through the use of a plurality of follower wheels for supporting said apparatus, and resisting movement in a lateral direction when operated along an inclined surface, said wheels being disposed beneath the conveyor and inwardly of the ends thereof. The apparatus includes a pickup means having a plurality of rows of fingers, each finger being generally L-shaped in configuration and having a base portion extending in the direction of rotation of the pickup means, said base portion providing resistance against radially outwardly movement of items being picked up by the pickup means, a stripper means disposed vertically above and rearwardly of the pickup means for transferring items picked up by the pickup means to a conveyor, said

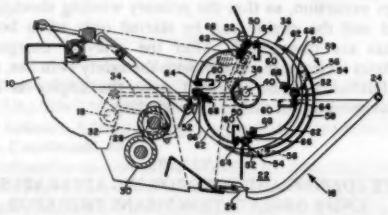
stripper means including a rotatably mounted member having a plurality of longitudinally extending flaps disposed about the periphery thereof, said rotatably mounted member being disposed such that a plane passing through the longitudinal axes of said member and said pickup means forms an included angle of approximately 27 degrees or more with a horizontally disposed plane, and means for adjusting the vertical distance separating the pickup assembly relative to the follower wheels. The apparatus also includes means for maintaining the topping knife of each topping unit in a predetermined attitude relative to a predetermined plane upon pivotal movement of the means supporting said topping knife.

3,733,796

HEADER HAVING HARVESTER REEL WITH TANGLE-PREVENTING FILLER PLATES THEREON

William Robert Wood, and Donald E. Burrough, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 4, 1967, Ser. No. 672,853
Int. Cl. A01d *57/02*
U.S. Cl. 56—220 **9 Claims**



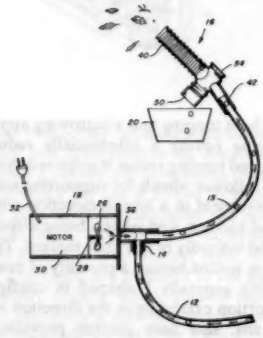
A pull-type harvesting machine having a transverse mower bar, a finger-type harvester reel coextensive with and above the mower bar for sweeping the cop thereto and then upwardly and rearwardly to a pair of conditioner rolls which condition the crop and throw it rearwardly against windrow shields which deflect the crop into a windrow on the ground, the harvester reel being provided with a plurality of plates detachably mounted around the reel to enclose the reel interior.

3,733,797

NUT HARVESTER

George P. Kelley, 1102 E. Sixth, Okmulgee, Okla.

Filed Dec. 30, 1970, Ser. No. 102,807
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **7 Claims**



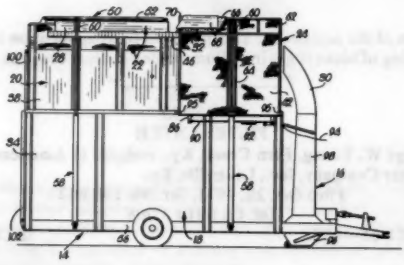
A nut harvesting machine includes a motor and blower adapted to send high pressure air into a venturi producing a vacuum on one side thereof. Attached to the vacuum side is a flexible hose and nozzle arrangement adapted to pick up nuts or other fruit from the ground and cause same to travel into the venturi and thence to a separator where the air velocity is reduced to allow the nuts to drop into a receptacle while the trash is separated and blown away.

3,733,798

PRESS FOR UNINTERRUPTED FILLING OF STACK FORMING WAGONS

Harold Keith Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Dec. 17, 1971, Ser. No. 209,312
Int. Cl. A01d *87/00*
U.S. Cl. 56—350 **22 Claims**



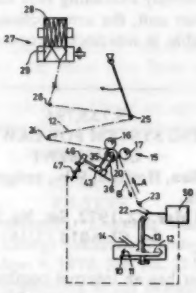
In the stacking of hay or other crops, a windrow or swath is lifted off the ground, fed into a pile collected by a vehicle-supported, stack forming body and the pile compressed from time to time in the body, all in a continuous operation as the vehicle is advanced across the field, by virtue of the provision of an accumulator which receives the crop while the pile is being compressed, and from which accumulator the crop so accumulated is thereupon dumped onto the compressed pile by retraction of a shiftable section of the press roof.

3,733,799

FORWARD AND REVERSE YARN FEEDING DEVICE FOR WITHDRAWING AND PIECING YARN IN A SPINNING APPARATUS

Ernst Roethke, Schorndorf, Germany, assignor to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany

Filed Aug. 6, 1971, Ser. No. 169,684
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **10 Claims**



In a spinning apparatus there is provided a yarn device which has two continuously and oppositely oppositely spaced rollers (a withdrawing roller and a reversing roller) and a pinch roller shiftable, in response to the tension of the spun

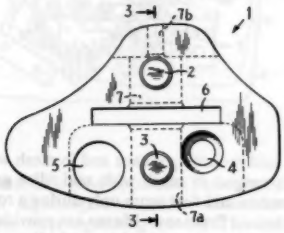
yarn, into engagement with either withdrawing to advance the yarn forward from a spinning device to a winding device, or the reversing reversing to return the yarn, in case of breakage, to the spinning device for piecing. In either operative position, the pinch roller projects the space between the withdrawing roller and the reversing roller.

3,733,800

WINDING STEM BEARING ASSEMBLY FOR WATCHES

Katsutoshi Maeda, Ichikawa, and Norio Kobayashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,989
Claims priority, application Japan, May 27, 1971, 46/36460
Int. Cl. G04b *31/00*
U.S. Cl. 58—140 R **6 Claims**



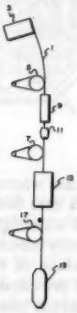
A winding stem bearing assembly for use in a watch having an injection molded plastic bearing made as an integral, unitary block with precision molded cavities therein for mounting components in the assembly. A winding stem is rotatably supported in an elongated cavity and a bearing pin and is retained with a part thereof housed in the bearing cavity by a bent part of a setting lever. A winding stem pinion is housed in a cavity in the bearing block and has a central opening through which the winding stem extends and is coupled thereto for joint rotation. A barrel and train-wheel bridge and plate are mounted on opposite sides of the bearing block which functions as their support and as a spacer. The bearing assembly requires no lubrication.

3,733,801

YARN PROCESS

Charles A. Jones, Shelby, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed July 1, 1971, Ser. No. 158,827
Int. Cl. D02g *1/00*
U.S. Cl. 57—157 TS **11 Claims**



A process for stringing-up an operational simultaneous draw-false twist machine is disclosed. In the process, the feed roll is engaged first and then the false twister is engaged to insert a low level of false twist in the yarn before the draw roll is engaged by the yarn.

ERRATUM

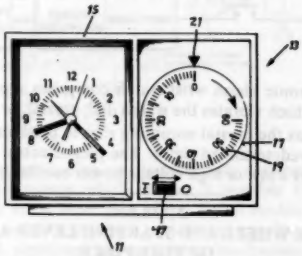
For Class 58—140 R see:
Patent No. 3,733,800

3,733,802

ALARM DEVICE

Otto Wisser, 7745 Schonach, Germany, assignor to Jahresuhren-Fabrik GmbH, Aug. Schatz & Sohne, Schwarzwald, Germany

Filed July 26, 1971, Ser. No. 165,928
Int. Cl. G04b *23/06*; G04c *21/30*
U.S. Cl. 58—16.5 **8 Claims**



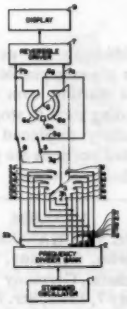
An alarm device with a double signal arrangement provided by a combination of two chronological movements united by means which initiates operation of the second chronological movement and the alarm mechanism thereof while stopping the alarm mechanism of the other.

3,733,803

DEVICE FOR CORRECTING TIME DISPLAYED ON ELECTRONIC TIMEPIECE

Michio Hiraga, Hoya-shi, and Makoto Yoshida, Tokorazawa-shi, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed June 21, 1972, Ser. No. 265,013
Claims priority, application Japan, June 23, 1971, 46/44847
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 R **5 Claims**



A device for correcting the time displayed on an electronic timepiece having a standard oscillator, a frequency divider bank, a time display unit, a reversible driver and an external actuating member for correcting the time display from the exterior of the timepiece. In the device, means, including an on-

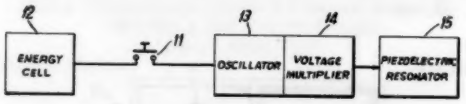
off switch, for applying a correcting signal at a variable frequency is connected to the driver through a normal-reverse switch, and these means are arranged for interlocking operation with the external actuating member so that the time display can be corrected at a rapid and controlled rate in response to the manipulation of the external actuating member.

3,733,804

ELECTRONIC ALARM WATCH

Gunther Rudolph Diersbock, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Sept. 29, 1971, Ser. No. 184,735
Int. Cl. G04c 21/00
U.S. Cl. 58—38 **11 Claims**



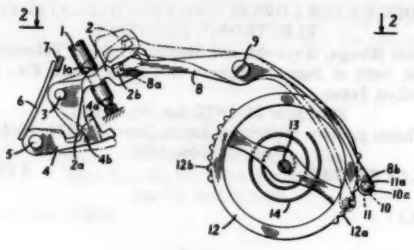
An electronic alarm wrist watch comprises a piezoelectric oscillator which vibrates the watch dial, crystal, or parts of the bezel such as the crystal mounting ring to produce an audible sound at predetermined times. The piezoelectric oscillator is energized by a low or high voltage power oscillator.

3,733,805

BALANCE WHEEL AND STARTING LEVER ASSEMBLY OF TIME PIECE

Toshibumi Kashimura, Funabashi, and Noriaki Kato, Tokyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 8, 1972, Ser. No. 251,178
Claims priority, application Japan, May 7, 1971, 46/35807
Int. Cl. G04f 7/04
U.S. Cl. 58—79 **8 Claims**



Indentations provided on the periphery of the balance wheel of a time piece are engageable by a starting spring carried on one end of a starting lever actuated by a push-pull movement of the winding stem to stop the time piece with the balance wheel angularly displaced from neutral position. Preferably two indented portions are provided at diametrically opposite sides of the balance wheel.

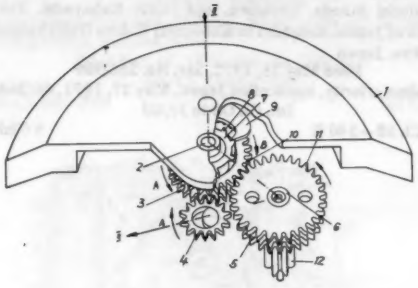
3,733,806

SELF-WINDING MECHANISM FOR WATCHES

Kurt Murrle, Pforzheim, Germany, assignor to Firma Bernhard Forster, Pforzheim, Germany

Filed July 7, 1972, Ser. No. 269,520
Claims priority, application Germany, July 22, 1971, P 21 36 545.7
Int. Cl. G04b 5/02
U.S. Cl. 58—82 R **11 Claims**

A rotor is mounted on mounting means for rotation in first and second senses. A drive pinion is coaxial to and non-rotatably connected to said rotor. A ratchet wheel is freely rotatably mounted on said rotor. A stepping pawl is mounted on said rotor and arranged to interengage with said ratchet wheel so as to couple to said rotor for rotation in, and only in, said second sense. Idler gear means are rotatably mounted on said mounting means. A reversing gear is radially floatingly



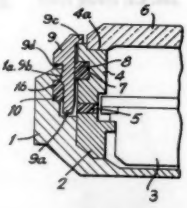
mounted on said mounting means and in mesh with said drive pinion and arranged to mesh with said idler gear means to rotate the same in said first sense only during a rotation of said drive pinion in said first sense. Means are provided to transmit motion from said ratchet wheel to said idler gear means to rotate the same in said first sense during a rotation of said rotor in said second sense.

3,733,807

WATERTIGHT WATCH CASE

Hideo Nozawa, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,487
Claims priority, application Japan, June 5, 1971, 46/47468; June 5, 1971, 46/47470
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R **11 Claims**

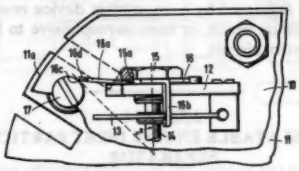


A watertight watch case wherein a bezel is inserted into a space formed between a case body and and a crystal-support ring such that the bezel watertightly presses first and second sealing gaskets respectively mounted within a first groove provided on the outer surface of the crystal-support ring and within a second groove provided on the inner surface of the case body. A third gasket is interposed between the crystal-support ring and a case ring mounted in the case body, the third gasket being axially compressed by the insertion of the bezel into the space.

3,733,808
DEVICE FOR THE PRECISION ADJUSTMENT OF A BALANCE

Robert Wolber, Lauterbach; Josef King, Schramberg-Sulgen, and Eckhart Kern, Schramberg, all of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed Nov. 5, 1971, Ser. No. 195,968
Claims priority, application Germany, Nov. 9, 1970, P 20 55 063.4
Int. Cl. G04b 17/14
U.S. Cl. 58—112 8 Claims



Balance wheel adjusting apparatus for a timepiece characterized by an adjusting lever which elastically engages an inclined surface on a regulating spindle. The inclined surface on the regulating spindle is inclined at an acute angle in relation to a swivel axis of the adjusting lever and this swivel axis generally coincides with the axis of the balance wheel.

3,733,809
PERSONALIZED PHOTOGRAPH TYPE WATCH

Eli Reiter, Dix Hills, and Herbert P. Hickey, Brentwood, both of N.Y., assignors to I.D.L. Co., Inc., Albertson, N.Y.

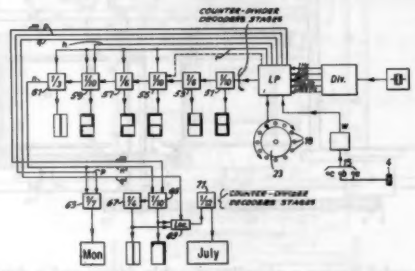
Filed Jan. 25, 1971, Ser. No. 109,108
Int. Cl. G04b 19/06
U.S. Cl. 58—127 R 10 Claims

A personalized photograph type watch and, more particularly a personalized photograph watch dial comprising a standard watch mechanism and enclosure structure; i.e., a case, a bezel and a crystal, wherein the dial or face plate comprises a metal foil of predetermined geometrical configuration having at least one personalized photograph print on the viewable surface of said dial, said metal foil initially having a photosensitive coating on one surface thereof and said coating having a half-tone negative of said personalized photograph exposed on said coated surface to produce said photograph watch dial.

3,733,810
TIMEPIECE WITH ELECTRONICALLY DESIGNED DIGITAL READ-OUT

Pierre Girard, Bienne, Switzerland, assignor to Manufacture des Montres Rolex S.A. Bienne, Bienne, Canton of Berne, Switzerland

Filed Mar. 5, 1971, Ser. No. 121,251
Claims priority, application Switzerland, Mar. 6, 1970, 3337/70
Int. Cl. G04b 19/24, 19/30, 27/00
U.S. Cl. 58—4 A 37 Claims

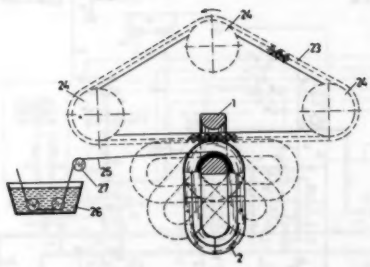


In a timepiece having an electronically designed read out, an improved means which makes it possible to manually operate and set at least part of the digital readout elements. The setting means comprise a preselector capable of being set in different positions and a driving mechanism. Both the preselector and driving mechanism are arranged in such a manner that the position occupied by the preselector at the time that the driving mechanism is manipulated determines the element or elements of the digital read-out to be affected by the manipulation as well as the function accorded by the manipulation.

3,733,811
PROCESS FOR THE FABRICATION OF A LINK CHAIN

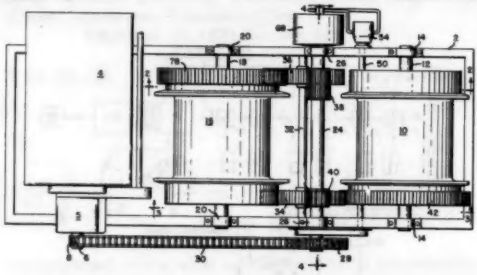
Peter Florjancic, St. Martin-Strasse 12, Garmisch-Partenkirchen, Germany

Filed June 1, 1970, Ser. No. 42,039
Int. Cl. F16g 15/12
U.S. Cl. 59—35 13 Claims



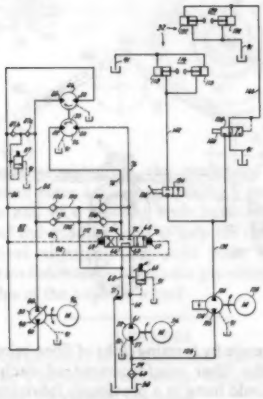
Link chain is made by forming links of fiber-reinforced thermoset plastic, the fiber reinforcement of each link being wound over a mould hung in a previously fabricated link after which the polymerizable impregnating resin, e.g., polyester, is cured to form the link which has no welding seams or the like. Moulds for winding and moulding of the links may be provided with teeth, indents or the like upon which a driving device may act to rotate the mould to wind the reinforcing fiber through a preformed link. High-grade chains having strength surpassing that of welded steel link chain can be produced.

3,733,812
YARDER HAVING AN INFINITE RATIO DRIVING INTERLOCK FOR SPOOLING DRUMS
Frank L. Lawrence, Vancouver, British Columbia, Canada, assignor to Smith-Berger Manufacturing Corporation, Seattle, Wash.
Filed Apr. 22, 1970, Ser. No. 30,678
Int. Cl. F01b 21/00
U.S. Cl. 60—6 4 Claims



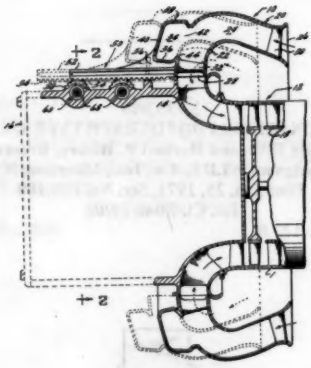
A yarder having a plurality of cable drums and a driving connection between the drums having an infinite variable driving ratio including an improved application of a hydraulic motor driving the haulback drum of a logging yarder allowing a controlled relative rotation between the drums. The pump for driving the motor is directly associated with the drive of the main drum. Further included are means for driving a mobile yarder mechanism using the power source and control mechanism for the drums as the motivating and control means for driving the tracks of the vehicle.

3,733,813
SPEED CONTROL SYSTEM FOR HYDRAULIC MOTOR
Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.
Filed Nov. 3, 1971, Ser. No. 195,093
Int. Cl. F15b 15/18
U.S. Cl. 60—393 16 Claims



Several embodiments of a speed control system for a hydraulic hoist motor are disclosed. The speed control means comprise a main hydraulic pump for driving the hoist motor; regulating means to vary the direction of flow and volume of fluid supplied to the hoist motor to thereby regulate motor direction and speed, respectively; and selectively operable operating means to actuate the regulating means. The operating means comprise a speed sensing hydraulic motor responsive to hoist motor speed. The operating means further comprise a manually or remotely controlled over-center pump for supplying a predetermined volume of fluid to the speed sensing motor through a control circuit to obtain a predetermined operating speed for the hoist motor. The fluid pressure in the control circuit theoretically is constant for any predetermined hoist motor speed but actually varies in proportion to changes in hoist motor speed (caused by load changes) to effect constant motor speed. In one embodiment, the main pump is a constant volume pump and it s output (and therefore hoist motor speed) is regulated by a pilot operated multiposition directional valve responsive to fluid pressure in the control circuit. In another embodiment, the main pump is a variable volume pump having its output (therefore hoist motor speed) regulated by a servo-stem device movable by a hydraulic actuator which, in turn, is responsive to fluid pressure in the control circuit.

3,733,814
TRANSLATABLE ENGINE INLET PARTICLE SEPARATOR
Thomas Neil Hull, Jr., Marblehead, and Anton Klug, Lawrence, both of Mass., assignors to General Electric Company, Lynn, Mass.
Filed Feb. 22, 1972, Ser. No. 227,885
Int. Cl. F02c 7/04; F01d 45/12
U.S. Cl. 60—39.09 DP 8 Claims

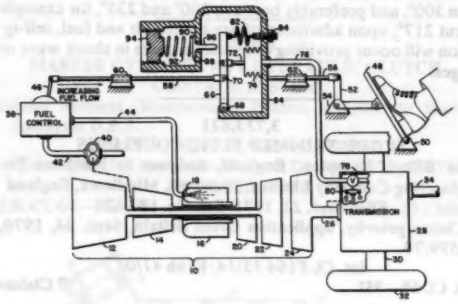


An inlet particle separator is provided for use with a gas turbine engine wherein the separator may be axially translated out of the compressor inlet flowpath for improved engine efficiency in areas of relatively clean air where ingestion of extraneous matter within the engine appears unlikely.

3,733,815
ACTUATING DEVICE FOR A GAS TURBINE ENGINE FUEL CONTROL
Joseph A. Karol, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Oct. 22, 1971, Ser. No. 191,742
Int. Cl. F02c 3/10
U.S. Cl. 60—39.16 R 9 Claims

An operator foot pedal actuates through a linkage a fuel control which meters fuel to the gas generator of a gas turbine engine. A power turbine is driven by the gas generator and is connected to a vehicle transmission. The transmission has a

governor which schedules power turbine speed for normal operating conditions. However, at the extremes of idle and maximum power a speed-responsive device shortens or



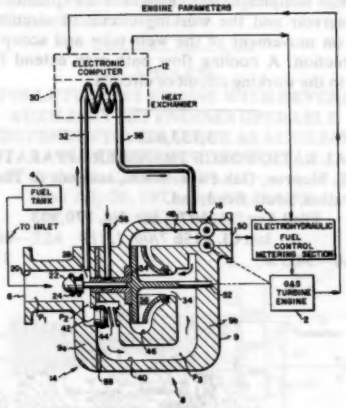
lengthens the effective length of the linkage to vary the output of the gas producer and thus control the speed of the turbine for these conditions.

3,733,816

PUMP OPERATED COOLING SYSTEM USING COLD FUEL

John E. Nash, Avon, and Charles W. Grennan, Newington, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed June 11, 1971, Ser. No. 152,264
Int. Cl. F02c *9/04, 7/12*
U.S. Cl. 60—39.28 R **7 Claims**



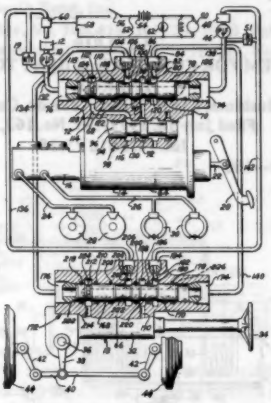
A cooling system for an electronics unit of a fuel control which includes a pump with an axial inducer first stage and a centrifugal impeller second stage, the stages being thermally insulated from each other. Relatively cold fuel from a fuel tank enters the axial stage and is delivered from there to a heat exchanger arrangement in the electronics unit. Fuel flow from the heat exchanger is returned to the pump at the inlet of the centrifugal stage which pumps the fuel to the fuel control. A bypass valve, designed to crack at a predetermined pressure, furnishes an additional flow path from the outlet of the axial stage to the inlet of the centrifugal stage.

3,733,817

EMERGENCY PUMP SYSTEM WITH DUPLICATE FLUID LINES

Stanley I. MacDuff, Daytona, Fla., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 25, 1971, Ser. No. 156,721
Int. Cl. F15b *15/18, 7/00*
U.S. Cl. 60—405 **6 Claims**



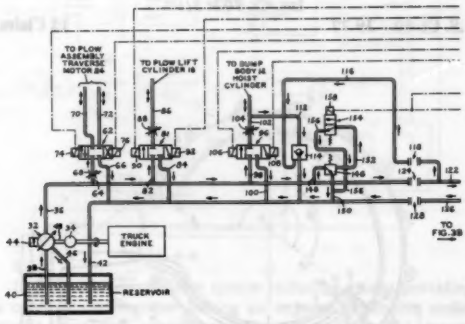
A hydraulic power brake and steering system for an automobile in which a primary engine driven pump provides fluid power for normal requirements, and an auxiliary electric motor driven pump provides fluid power in event of failure of the primary system. The system includes flow sensing means to determine when the primary system has failed, and also includes duplicate sets of hydraulic lines and pump reservoirs and a pair of shuttle valves for switching the flow from one set of lines and reservoir to the other depending upon which pump is providing fluid power.

3,733,818

HYDRAULIC SYSTEM FOR TRUCKS

Raymond M. Veres, Brooklyn, N.Y., assignor to The Port of New York Authority, New York, N.Y.

Filed July 21, 1971, Ser. No. 164,551
Int. Cl. F15b *11/16*
U.S. Cl. 60—422 **8 Claims**



A hydraulic system for simultaneously operating a plurality of attachments on a motor vehicle, such as a snow plow, dump body, or salt spreader. Separate valves for controlling the attachments are connected in parallel hydraulically between a common pressure manifold and a common return line so that the same pressure is available to each valve. In one embodi-

ment a pressure compensated pump is connected between a fluid reservoir and the pressure manifold. The return line empties fluid into the reservoir. In another embodiment a pressure compensated main pump is connected between the common pressure manifold and the common return manifold to continually circulate fluid under pressure through the system while a priming pump initially charges the hydraulic system with fluid from the reservoir and thereafter maintains a pressurized flooded suction line on the main pump, and supplies make up hydraulic fluid to the system.

3,733,819

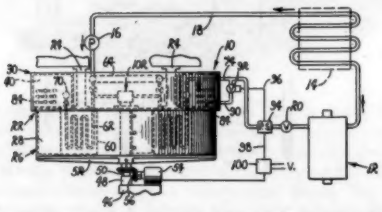
SYSTEM FOR CONVERTING HEAT TO KINETIC ENERGY

Anthony Mushines, 534 N. Winery, Fresno, Calif.

Filed July 16, 1971, Ser. No. 163,333

Int. Cl. F01d *25/28*

U.S. Cl. 60—108 **13 Claims**



A system for converting heat to kinetic energy, characterized by a fluid-driven motor responsive to an introduction of high-pressure fluid for driving a selected power train, and a pressure generator for introducing the high-pressure fluid to the motor. The pressure generator includes a plurality of boiler tubes for receiving low-pressure fluid, a fire-box for successively transferring heat to the boiler tubes, and a pressure equalizer for incrementally equalizing pressures within boiler tubes, whereby an introduction of low-pressure fluid, followed by an efficient conversion to a high-pressure fluid, is facilitated within the system.

3,733,820

COMBUSTION GAS GENERATOR

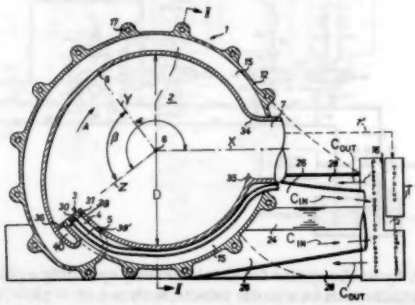
Louis Andersson, Gotgatan 73 IV, Stockholm, Sweden

Filed Apr. 12, 1971, Ser. No. 133,321

Claims priority, application Switzerland, Apr. 16, 1970, 5652/70

Int. Cl. F02c *5/10*

U.S. Cl. 60—39.77 **12 Claims**



A combustible mixture of air and fuel is provided to a chamber formed in a housing; the combustion chamber is of a specific shape, so arranged that, in longitudinal section, it has approximately the shape of a single turn spiral, with the fuel and supply means connected to the spiral at the point of the maximum rate of change of curvature of the spiral wall, and the outlet from the spiral being located such that its axis is shifted with respect to the location of maximum rate of change of curvature of the spiral, by an angle of over 180° and less than 300°, and preferably between 200° and 235°, for example about 217°; upon admission of pre-heated air and fuel, self-ignition will occur providing combustion gases in shock wave or surges.

3,733,821

SCOOP-TRIMMED FLUID COUPLINGS

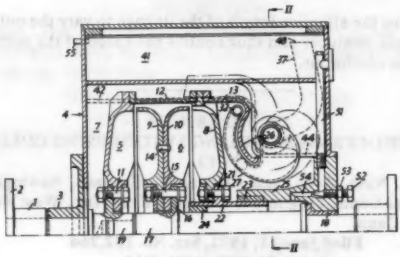
John Bilton, Hampton, England, assignor to Fluidrive Engineering Company Limited, Isleworth, Middlesex, England

Filed Sept. 22, 1971, Ser. No. 182,624

Claims priority, application Great Britain, Sept. 24, 1970, 45,599/70

Int. Cl. F16d *33/14*; F16h *41/04*

U.S. Cl. 60—351 **7 Claims**



The trimming scoop of a scoop-trimmed fluid coupling is interconnected with a movable weir tube in an overhead reservoir to effect complementary changes in the volumes of liquid in the reservoir and the working circuit or circuits of the coupling on movement of the weir tube and scoop tube in either direction. A cooling flow path may extend from the reservoir to the working circuit or circuits.

3,733,822

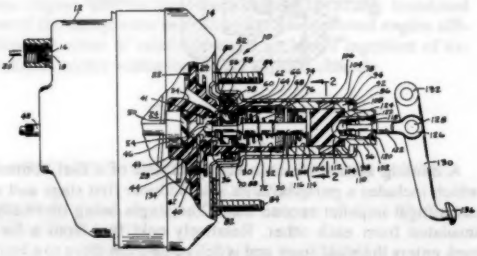
DUAL RATIO FORCE TRANSFER APPARATUS

William E. Monroe, Oak Park, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 11, 1971, Ser. No. 170,903

Int. Cl. F15b *7/00, 13/10*

U.S. Cl. 60—54.5 R **11 Claims**



An apparatus for transforming an input force to an operational force to activate a pressure controlled power device. In a first mode of operation the input force is directly communicated through a confined deformable medium to an output

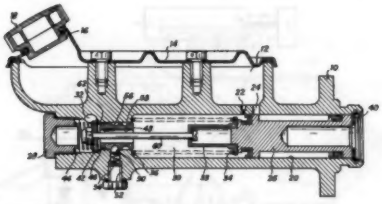
member. Upon a predetermined operational force being required, the confined deformable medium changes its characteristics from a solid-like body to a liquid-like body for a second mode of operation. In the second mode of operation the input force is converted to an operational force which is the product of the pressure in the liquid-like body acting over the contacting area of the output member.

3,733,823

MASTER CYLINDER FOR HYDRAULIC CLUTCH CONTROL SYSTEM

Roland Muterel, Bessancourt, France, assignor to Societe Anonyme D.B.A.

Filed Dec. 16, 1971, Ser. No. 208,564
Claims priority, application France, Dec. 30, 1970, 7047278
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 R **10 Claims**



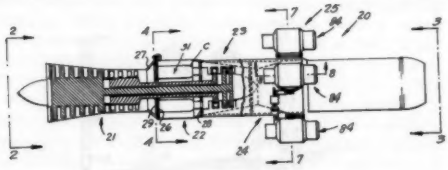
A hydraulic master cylinder more particularly adapted to control a hydraulic clutch control system. The variable volume fluid chamber of the master-cylinder communicates with the outlet port connected to an hydraulic clutch receiver through a one-way valve 42 in such a manner that the check-valve normally delayes the return fluid flow to the chamber. The valve 42 is unseated by a sliding sleeve when the inward travel of the piston exceeds a predetermined value. A ball cooperates with sleeve to maintain the latter in either of two predetermined positions corresponding to the opened and closed position of the one-way valve.

3,733,824

ANTIPOLLUTION JET ENGINE WITH REVERSIBLE AUXILIARY JET ENGINES OPERABLE INDEPENDENTLY TO SERVE AS AUXILIARY THRUSTERS AND BRAKES

Lewis M. D. Grainger, Glen Allen, Va.

Filed July 20, 1971, Ser. No. 164,391
Int. Cl. F02k *3/08*
U.S. Cl. 60—224 **9 Claims**



An antipollution jet engine in which air is fed through the chamber walls of the combustion chamber downstream of the fuel oil nozzle. The air is caused to have a tangential swirling motion to assist in obtaining a complete burning mixture so as to burn all combustible material in the fuel to eliminate pollution.

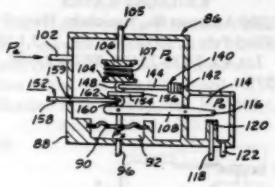
Additional fuel is supplied to a downstream burner similarly provided with downstream air admission ports to create a circular tangential turbulence for a complete mixing and complete burning of the combustible materials. The function of the downstream burner is to assist in completely burning all of the combustible materials resulting from the first burners. The fuel for the first burners and the downstream burner is preheated to improve ignition and burning.

3,733,825

THRUST CONTROL MECHANISM

Samuel E. Arnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 748,416, July 29, 1968, Pat. No. 3,572,038. This application Nov. 18, 1970, Ser. No. 90,777
Int. Cl. F02k *1/16*
U.S. Cl. 60—235 **4 Claims**



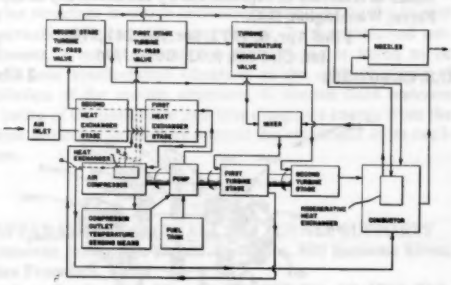
A thrust control mechanism for use in association with a combustion engine having a valve means to control the flow of fuel to said combustion engine upon command, which is responsive to a pressure responsive member for sensing thrust as a function of the pressure drop across said combustion engine exhaust nozzle. Said thrust control mechanism may further include an absolute reference means to compensate for changes in ambient pressure of the device and a variable nozzle area input means to compensate for changes in combustion engine thrust due to different settings of nozzle area.

3,733,826

FUEL COOLED RAM AIR REACTION PROPULSION ENGINE

Robert L. Wolf, Chesterfield County, Va., and Rodney McGann, Northridge, Calif., assignors to Texaco Experiment Incorporated, Richmond, Va.

Filed Feb. 10, 1964, Ser. No. 343,871
Int. Cl. F02k *3/10*
U.S. Cl. 60—263 **7 Claims**



1. A reaction propulsion system including means providing a combustion chamber having an impulse expansion outlet nozzle therefrom, means providing a ram air intake, means directing air from the ram air intake to the combustion chamber, a fuel storage chamber, multi-stage heat exchange means in heat exchange contact with the air in said air directing means, means directing fuel from said storage chamber through a first stage of said heat exchange means, an air compressor providing a portion of the air directing means between

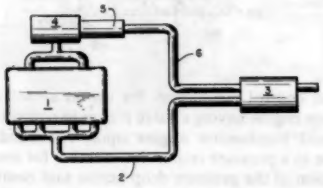
the heat exchange means and said combustion chamber, a multi-stage direct expansion turbine for driving said compressor, means directing at least a portion of fuel from the first stage of said heat exchange means through a first stage of said direct expansion turbine and then into a second stage of said heat exchange means, means directing at least a portion of fuel from the second stage of said heat exchange means through a second stage of said direct expansion turbine and then into said combustion chamber, a regenerative heat exchanger in said combustion chamber, and means for selectively directing a portion of the fuel passing through the first stage of said heat exchange means to said regenerative heat exchanger and then to the first stage of said turbine.

3,733,827

ANTI-POLUTION DEVICE FOR COMBUSTION ENGINE EXHAUST GASES

Ken Suzuki, 1360 Ainapua St., Honolulu, Hawaii

Filed Feb. 3, 1972, Ser. No. 223,125
Int. Cl. F02b *75/10*; F02m *25/06*
U.S. Cl. 60—278 **8 Claims**



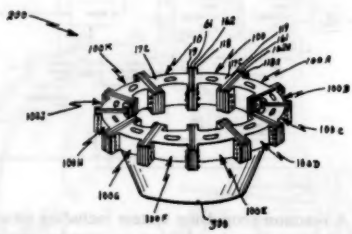
An anti-polution device for combustion engine exhaust gases in which the toxic elements of the exhaust gases are removed as much as possible through an exhaust gas cleaner which is connected with the exhaust pipe of the engine and is also connected to the carburetor air regulator of the engine on its suction side. The exhaust gases thus purified through the exhaust gas cleaner and the carburetor air regulator are mixed with air by the sucking force of the engine and are sent into the combustion chamber of the engine for recombustion of the same therein.

3,733,828

ROCKET CHAMBER AND INJECTOR SEGMENTATION AND SUPERSONIC BAFFLES

Donald G. Brown, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,570
Int. Cl. F02k *9/02*; B05b *1/06*
U.S. Cl. 60—258 **2 Claims**



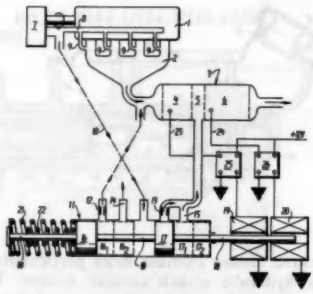
The conventional thrust chamber and injector assembly of a liquid propellant rocket engine are manufactured by removably connecting together a plurality of identical arcuate segments thereof, with each segment having an identical baffle plate at each of the two ends of the segment. The identical arcuate segments, together with the identical baffle plates, collectively form the toroidal thrust chamber and injector assembly. The segmentation accelerates manufacture of the assembly and permits easy and rapid removal and replacement of any of the segments. The baffle plates extend beyond the throat of the thrust chamber and into the supersonic region in the nozzle area and, thereby, provide circumferential stability of the rocket motor.

3,733,829

DEPOLLUTION GASES

Claude Henault, Chevilly-Larue, France, assignor to Regie Nationale des Usines Renault et Societe Dite des Automobiles Peugeot, Paris, France

Filed Oct. 5, 1972, Ser. No. 295,357
Claims priority, application France, Dec. 28, 1971, 7146986
Int. Cl. F02b *75/10*
U.S. Cl. 60—289 **4 Claims**



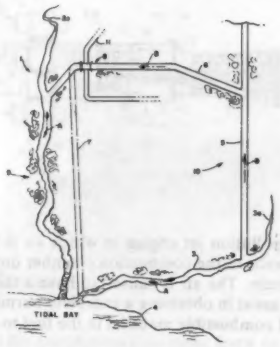
An apparatus for supplying air to a catalytic, oxidizing-reducing reactor for the exhaust gases from an internal combustion engine. An air pump with an output rate at least twice that required for complete combustion of carbon monoxide delivers an amount of air to a pair of catalytic beds which are adjusted from common thermostatically and discontinuously controlled distribution means determined by the catalytic bed temperatures, such that the reducing bed initially functions as an oxidizer and the oxidizing bed is cooled by excess air the moment a critical temperature is reached.

3,733,830

TIDAL FLOW SYSTEM AND METHOD FOR CAUSING WATER TO FLOW THROUGH WATERWAYS

Marcellus L. Jacobs, Rt. 3 Box 722, Fort Myers, Fla.

Filed June 7, 1971, Ser. No. 150,286
Int. Cl. E02b *3/00*, *15/00*
U.S. Cl. 61—1 **13 Claims**



A tidal flow system and method for causing flow of water through waterways to flush said waterways and prevent stag-

nation of water and accumulation of debris therein, wherein a one-way valve means is in said waterway between the ends thereof, said valve means being closed when the depth of water on the discharge side of the valve is greater than on the inlet side of the valve and said valve means being opened when the depth of water on the discharge side of the valve is less than on the inlet side thereof, the depth of water at least on the discharge side of the valve being controlled by tidal action.

3,733,831

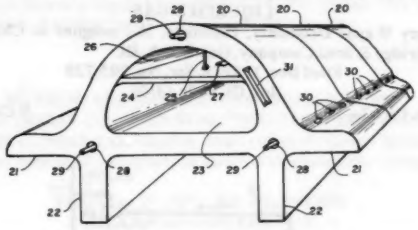
METHOD AND APPARATUS FOR PREVENTING EROSION AND FOR CONVEYING

Charles W. Sticker, Jr., Mohnton, Pa., assignor to Gray Tech Industries, Inc., Mohnton, Pa.

Continuation-in-part of Ser. No. 26,829, April 9, 1970. This application Mar. 12, 1971, Ser. No. 123,538

Int. Cl. E02b *3/06, 3/08*

U.S. Cl. 61—4 **5 Claims**



This invention relates to improvements for preventing erosion of beaches by tidal waves comprising placing a plurality of conduit units in mating end-to-end relationship and bolting them together by stressing wires extending through registering holes. Each unit has a pair of deep legs or drag footers through which fluid is forced so as to stabilize the support. The same type of structure when considerably increased in size may serve as a vehicular tunnel and may be provided with a horizontal partition to provide ventilation at the top of the tunnel.

3,733,832

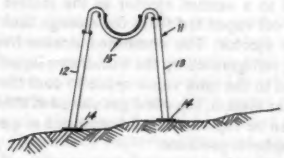
TROUGH STRUCTURE

Todd D. Bailey, 2767 Olive Highway, Oroville, Calif.

Filed Aug. 18, 1969, Ser. No. 850,814

Int. Cl. E02b *9/04*

U.S. Cl. 61—15 **2 Claims**



A trough structure particularly adapted for use as an irrigation trough or flume which is formed from a plurality of rectangular sheets of relatively inexpensive material such as corrugated roofing and which is supported above the ground by portable supports spaced apart longitudinally of the path of the trough. The ends of adjacent sheets of material are secured in lapping relationship to each other at said supports and means is provided for preventing leakage at the lapped seams.

3,733,833

PLUGGING OF PERMEABLE MATERIALS

Christ F. Parks, Tulsa, and Louis H. Eilers, Inola, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1971, Ser. No. 176,324

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 R **11 Claims**

A method is provided for plugging permeable materials, preferably permeable earthen materials. An aqueous solution having a neutral to basic pH and containing dispersed therein a water soluble organic polymer containing a plurality of carboxylic groups and an organic material having an acid reaction is acidized to form a precipitate in situ in the permeable material thus reducing the permeability of the material.

3,733,834

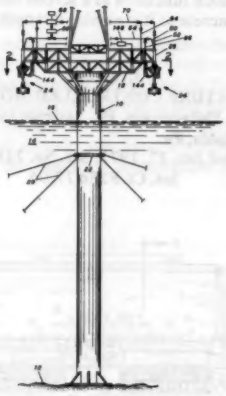
DYNAMIC DAMPER FOR OFFSHORE STRUCTURES

Ludwig Ludwig, deceased, late of 110 St. Albans Road, Berkeley, Calif. (by Gina L. Cline, executrix)

Continuation of Ser. No. 139,075, April 30, 1971. This application May 1, 1972, Ser. No. 249,429

Int. Cl. E02d *21/00*

U.S. Cl. 61—46 **14 Claims**



Apparatus for dynamically damping the vibrations of a marine structure in which oscillation is induced by the impact of periodically occurring wave forces. In the preferred embodiment, a massive pendulum is used and is tuned to be forced into synchronous vibration at the critical stages of oscillation of the marine structure. A viscous fluid restrains the swing of the pendulum and thus dissipates energy from the marine structure to thereby control the amplitude of its oscillation.

3,733,835

APPARATUS FOR ADVANCING TUNNEL SUPPORTS

J. Donovan Jacobs, c/o Jacobs Associates, 500 Sansome Street, San Francisco, Calif.

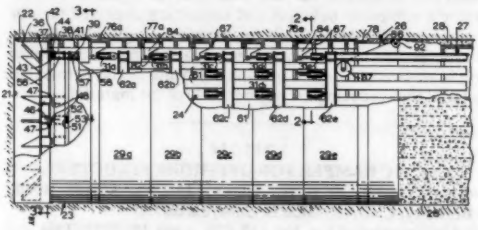
Continuation-in-part of Ser. No. 798,097, Feb. 10, 1969. This application Apr. 2, 1971, Ser. No. 130,686

Int. Cl. E01g *3/04*

U.S. Cl. 61—84 **14 Claims**

Apparatus and method for continuously or intermittently advancing tunnel supports against surrounding earth pressure. Cutting edge and trailing shells are interconnected by a longitudinal frame or cage structure. Intermediate the forward and trailing shell are overlapping intermediate shells which are individually connected to the cage structure by hydraulic cylinders so that each intermediate shell can be moved lon-

gitudinally relative to the others and relative to the tunnel wall while the other intermediate shells engage the tunnel wall and advance the cage as well as the forward or support and trailing shells. The intermediate shells are sequentially moved forwardly, preferably by releasing the pressure exerted against the wall, as by contracting the shell or by projecting through the shell various-shaped devices which grip or penetrate the



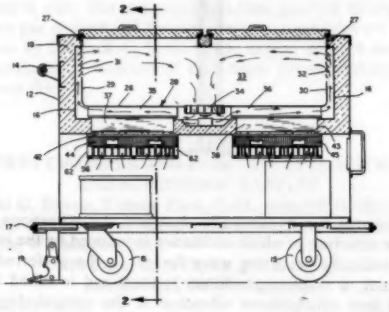
wall. The support may incorporate steering guidance means for adjusting the direction of the excavation device about perpendicular transverse aces. Means is also provided on the trailing shell for feeding out the rearward end ribbons, or rods to support the tunnel walls prior to concreting and also a retainer shell which functions as a screed for the concrete and supports the concrete as it is gaining strength.

3,733,836

TEMPERATURE CONTROLLED MOBILE CART

Louis J. Corini, Philadelphia, Pa., assignor to Melbro Corporation, Philadelphia, Pa.

Filed Jan. 17, 1972, Ser. No. 218,356
Int. Cl. F25d *17/06*
U.S. Cl. 62—3 **1 Claim**



A mobile cart is provided with thermoelectric cooling means actuated by a circuit which provides for either external A. C. current input or integral D. C. current power supply. A cabinet is specially constructed to pass air through a finned heat sink for heat transfer purposes and through the controlled temperature container portion of the cart.

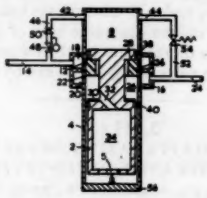
3,733,837

THERMODYNAMIC RECIPROCATING MACHINE

Alexander James Lobb, Surrey, England, assignor to The British Oxygen Company Limited, London, England

Filed Nov. 15, 1971, Ser. No. 198,631
Claims priority, application Great Britain, Nov. 18, 1970, 54,880/70; Mar. 24, 1971, 7,746/71
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **13 Claims**

A simple form of refrigerator in which gas is cooled by expansion of a gas in an expansion chamber. The refrigerator includes a reciprocable displacer located within the cylinder, the expansion chamber being defined, at least in part, between



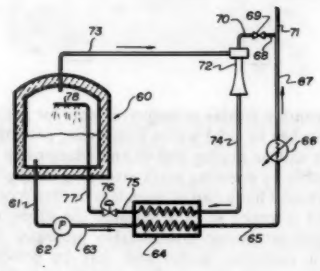
the end of the displacer and the inner wall of the cylinder. Inlet and outlet of gas to the expansion chamber is controlled by a valve or valves operated by the displacer.

3,733,838

SYSTEM FOR RELIQUEFYING BOIL-OFF VAPOR FROM LIQUEFIED GAS

Terry Wayne Delahunty, Plainfield, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 1, 1971, Ser. No. 203,729
Int. Cl. F17c *13/00*
U.S. Cl. 62—54 **9 Claims**



Apparatus and processes for recondensing boil-off vapor from an insulated storage tank containing a liquefied gas, such as liquefied natural gas, so that it continues to comprise a part of the stored liquefied gas.

Boil-off vapor is recondensed by refrigeration obtained from expansion of a liquefied gas stream withdrawn from the storage tank. The expanded stream, as a vapor, can be pressurized by feeding it to the suction side of an ejector to which a high pressure gas is fed to supply the motive force. Alternatively, a vapor stream derived from the stored liquefied gas can be fed to a venturi ejector as the motive force to pressurize boil-off vapor fed from the storage tank to the suction side of the ejector. The combined stream from the ejector, after being refrigerated by the withdrawn liquefied gas stream, is expanded to the tank vapor space to cool the tank contents. Under either system, liquefied gas stored at about atmospheric pressure can be vaporized and distributed at a pressure greater than atmospheric pressure.

3,733,839

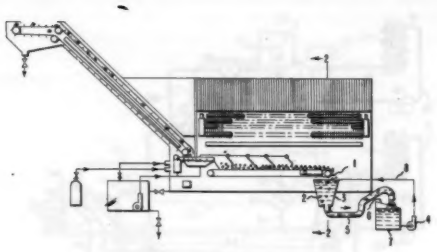
PROCESS FOR REMOVING ARTICLES FROM HEAT EXTRACTION DEVICES

Vincent Howard Waldin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1971, Ser. No. 171,098
Int. Cl. F25d *17/02*
U.S. Cl. 62—64 **5 Claims**

In a process for extracting heat from articles by contacting them directly with an ebullient liquid polyfluorinated C_1–C_4

saturated halohydrocarbon freezant in a 100 percent freezant vapor zone, the method of removing the articles from said freezant-vapor zone by dropping them into a flowing stream of



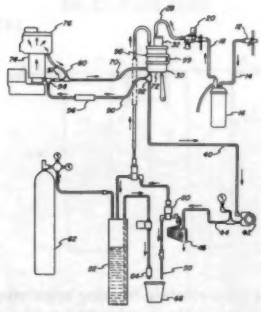
liquid which carries them to a discharge point outside the 100 percent freezant vapor zone; discharging the stream with the articles and separating the articles from the stream.

3,733,840

METHOD AND APPARATUS FOR INHIBITING BACTERIAL GROWTH IN AUTOMATIC ICEMAKERS

Donald C. Pearl, Lake Zurich, and Arthur P. Gross, Bensenville, both of Ill., assignors to Canteen Corporation, Chicago, Ill.

Filed May 17, 1971, Ser. No. 143,888
Int. Cl. F25c 1/14; F24f 3/16
U.S. Cl. 62—78 **14 Claims**



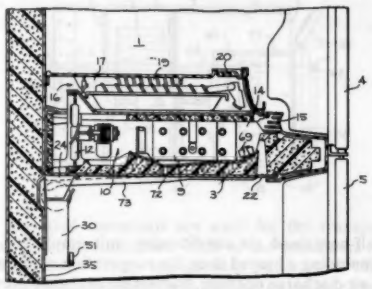
In an automatic icemaker of the type used in automatic vending machines, the ice cubes, chunks or slush are normally stored in a compartment. In many instances melt-down liquid from the stored ice is allowed or circulated to return and join the water in the freezing chamber. With water at these low temperature levels, the network must be cleaned out periodically to prevent growth of bacteria, slime and other contaminants, both in the storage compartment and in the entire water network. The present invention provides a method and apparatus for automatically sanitizing the water network periodically. The sanitizing cycle includes heating the water in the network to a sanitizing temperature and recirculating the heated water throughout the network. Stored ice is melted and its water may be allowed to join with the circulating water. Once the water in the network has reached the desired sanitizing temperature, it is maintained at that level long enough to ensure the destruction of any bacteria and slime which may have formed. Naturally the sanitizing cycle is set to occur during periods when the icemaker is normally not being used.

3,733,841

REFRIGERATOR TEMPERATURE CONTROL

Robert B. Gelbard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 15, 1971, Ser. No. 189,692
Int. Cl. F25d 17/00
U.S. Cl. 62—180 **4 Claims**



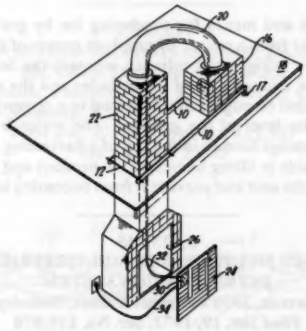
A refrigerator including a storage compartment cooled by forced circulation of air from the compartment over an evaporator and the return of cooled air to the compartment includes a fixed temperature control means for controlling the operation of the refrigeration system and means for varying the flow of cooled air over the fixed temperature control in order to control the operating temperature of the compartment.

3,733,842

FIRE PLACE AIR CONDITIONING APPARATUS

Harry P. Numsen, Antioch, Calif.

Filed July 21, 1971, Ser. No. 164,670
Int. Cl. F25d 23/12
U.S. Cl. 62—259 **1 Claim**



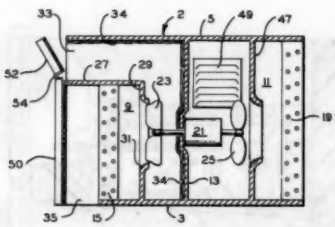
Air conditioning apparatus coqperates with and is at least partially installed in a fire place and its chimney to enable the fire place to be used for cooling as well as heating.

3,733,843

SELF-CONTAINED AIR CONDITIONING UNIT

David E. MacLeod, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,980
Int. Cl. F25d 23/12
U.S. Cl. 62—262 3 Claims



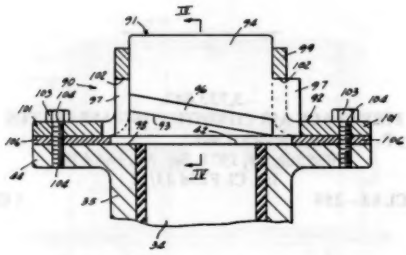
A self-contained air conditioning unit employing a front panel including a hinged door for cooperation with the conditioned air discharge opening, friction means being provided to maintain the door in any desired position against the force of the discharge air and limit the maximum door open position.

3,733,844

AUGER ICE MAKER WITH KNIFE CRACKING DEVICE

Phillip H. Turner, Inver Grove Heights, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 39,774, May 20, 1970. This application June 24, 1971, Ser. No. 156,289
Int. Cl. F25c 1/14
U.S. Cl. 62—320 4 Claims



A method and means for producing ice by gravitationally feeding water from a source of supply in excess of the freezing capacity of a refrigerated cylinder, wherein the feed water is directed into a lower part of the cylinder and the excess feed water is vented through a drain located in a compression nozzle above the level of the cylinder. The water is circulated through openings formed in the top of a harvesting auger. The water flow aids in lifting harvested ice product and also serves to thaw out the unit and prevent it from becoming ice bound.

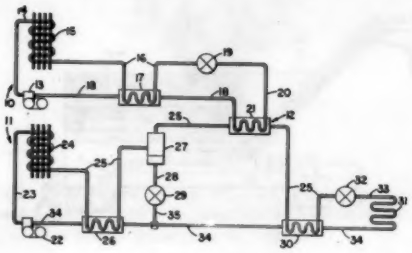
3,733,845

CASCADED MULTICIRCUIT, MULTIREFRIGERANT REFRIGERATION SYSTEM

Daniel Lieberman, 2931 Piedmont Avenue, Berkeley, Calif.

Filed Jan. 19, 1972, Ser. No. 218,870
Int. Cl. F25b 7/00
U.S. Cl. 62—335 10 Claims

A refrigeration system having two or more closed refrigerant circuits in which each circuit has a compressor, a condenser connected to the compressor outlet, a high-pressure line connecting the condenser to an evaporator and a low-pressure line returning from the evaporator to the compressor inlet and in which each circuit after the first has at least one vapor-liquid separator in the high-pressure line and is charged with a mixture of refrigerants. The evaporator of each circuit is in heat exchange with the high-pressure line of the next successive circuit at a point downstream of the first separator therein. The system enables very low temperatures to be reached in the evaporator of the final circuit with conventional, relatively low-pressure, oil-lubricated compressors being used throughout.

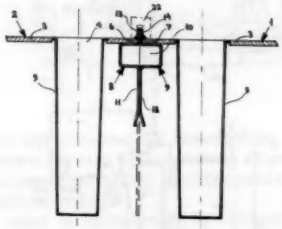


3,733,846

ANNULAR TABLE FOR A ROTATING FREEZING APPARATUS

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Oct. 22, 1971, Ser. No. 191,590
Claims priority, application Denmark, Oct. 27, 1970, 5459
Int. Cl. F25c 7/12
U.S. Cl. 62—345 3 Claims



Annular table for a rotating freezing apparatus wherein the lower surface of the table is subjected to the action of the freezing medium, wherein the table is divided into a plurality of adjacent sections, each of such sections having duct means secured to their adjacent edges, the duct means of two adjacent edges forming in cooperation a duct extending in the radial direction of the table and being open at least at one end thereof, each of said adjacent duct means comprising a lip, the lips of two adjacent duct means forming a narrow slit along the bottom of the duct formed by said two adjacent duct means.

3,733,847

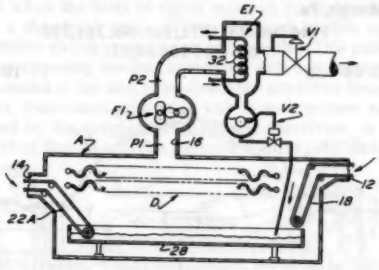
DIRECT CONTACT HALOCARBON FREEZANT APPARATUS

Harold R. Powell, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 24, 1971, Ser. No. 127,620
Int. Cl. F25d 17/02
U.S. Cl. 62—375 8 Claims

Direct contact halocarbon freezant system employs a chamber whose article inlet and outlet are open to atmosphere and includes blower for drawing air through both while gases and vapors are discharged through a pair of condenser arrays

at top of chamber. Articles are subjected to direct contact with freezant in chamber and halocarbon loss minimized since



secondary condenser temperature determines partial pressure of freezant vapor and accordingly the relative freezant-to-air volume.

3,733,848

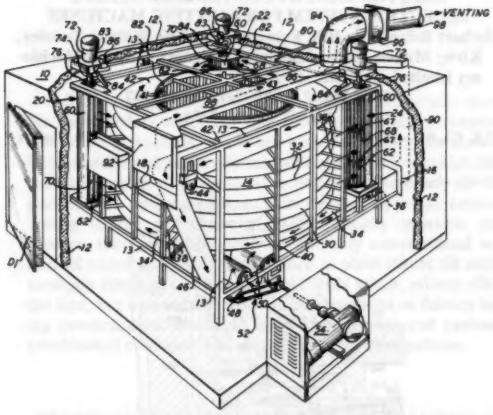
FREEZING SYSTEM

Paul P. Duron, Orange; Thomas A. Carter, Jr., Whittier, and Frank Mondok, Glendora, all of Calif., assignors to Airco, Inc., New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,175

Int. Cl. F25d *25/02*

U.S. Cl. 62—381 **9 Claims**



A high rate freezing system comprising an insulating housing wherein expansion of liquid carbon dioxide (CO_2) maintains a freezing atmosphere. A belt conveyor with multiple flights defining a vertical helix passes food products through the housing. A plurality of line-flow blowers with vertical axes of rotation at spaced positions around the helix direct wide streams of cold CO_2 gas respectively, generally tangentially across all the conveyor flights for causing swirling movement of the gas throughout the helix.

3,733,849

APPARATUS FOR TRANSPORTATION OF COMMODITIES

Raymond E. Cantagallo, Drexel Hill, and J. Lutz, Swarthmore, both of Pa., assignors to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Division of Ser. No. 834,281, June 18, 1969, abandoned. This application June 29, 1971, Ser. No. 158,025

Int. Cl. F25d *17/06*

U.S. Cl. 62—414 **1 Claim**

Large insulated containers are used for the transport of chilled or frozen commodities. Each of the containers has its own electric-motor-driven refrigeration equipment, which is supplied with electric power from the ship or trailer chassis on which the containers are being transported. In the containers, a continuous flow of refrigerated (or, in some cases, heated) air is maintained up through and/or around the packaged commodity. Means is provided to change the atmosphere inside the container by the addition of fresh air. A temperature set point adjustment is provided to maintain the temperature of the air being circulated in the container. A relatively simple and convenient arrangement is provided for mounting the refrigeration equipment on the container.

3,733,850

REFRIGERATION HEAT PUMP, AND HEAT ENGINE APPARATUS

Sven A. Olund, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 3,523, Jan. 16, 1970, Pat. No. 3,642,634. This application Dec. 28, 1971, Ser. No. 213,174

Int. Cl. F25b *43/02*

U.S. Cl. 62—468 **3 Claims**

An apparatus capable of being employed as a refrigeration, heat pump, or heat engine containing a halogenated alkane working fluid and a lubricant combination of alkylbenzenes containing from 10 to 25 carbon atoms in the alkyl groups and from about 2 to about 50 percent by weight of polyisobutylene having a viscosity in the range of about 3,000 to about 1,000,000 SUS at 100°F.

3,733,851

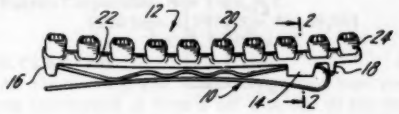
GEMS IN LINKED SETTINGS AND MECHANICALLY SECURED TO A BASE MEMBER

Louis D'Apuzzo, Fairfield, N.J., assignor to H. Goodman & Sons, Inc., Kearney, N.J.

Filed Dec. 27, 1971, Ser. No. 211,987

Int. Cl. A44c *25/00*

U.S. Cl. 63—1 **5 Claims**



A chain of artificial gems in settings of sheet-metal, interconnected by links. The bottoms of the gem settings, and the sides, bottom and at least part of the top of each link, are intimately received in mechanically conforming portions of a cast

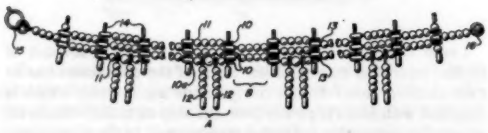
base member that rigidly unifies the whole. In one example, the base member has an integral mounting formation that secures the gem-bearing unit to a bobby pin or other article, and in another example, the chain of artificial gems unified by the base member forms the bar of a barrette.

3,733,852

ORNAMENTAL CONSTRUCTION OF SAFETY PINS AND BEADS

Lu Wanna M. Johnson, 7515 E. Hubbell, Scottsdale, and Barbara L. Zachariae, P.O. Box 136, Young, both of Ariz.

Filed July 14, 1972, Ser. No. 271,805
Int. Cl. A44c *25/00*
U.S. Cl. 63—2 **1 Claim**



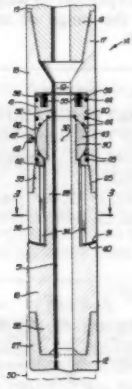
A novel hobby-craft construction for costume jewelry is provided. The construction consists of recurring units of common safety pins. Each recurring unit consists of two or more parallel safety pins arranged so that the ends of the pins in each unit are adjacent the ends of the parallel pins of the next unit. Transverse linking pins join the ends of the parallel pins of one unit to the ends of the parallel pins in the next unit. Ornamental beads are selectively strung on the needle shafts of the longitudinal and transverse pins.

3,733,853

FLEXIBLE DRILL STRING JOINT

Wayne N. Sutliff, and Jim L. Downen, both of 2931 Pierce Rd., Bakersfield, Calif.

Filed July 19, 1971, Ser. No. 163,898
Int. Cl. F16d *3/16*
U.S. Cl. 64—7 **4 Claims**



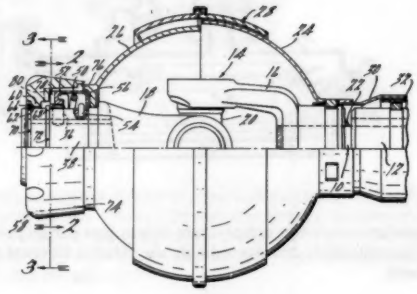
Upper and lower subs are short coupled by a ball and socket connection embodying a torque-absorbing spline means loose enough not to interfere with flexing of the two subs about the center of their connection.

3,733,854

SHIELDED ANGULAR DRIVE TRANSMITTING JOINT AND SHIELDED QUICKLY DETACHABLE COUPLING THEREOF

John R. Young, and John C. McElwain, both of Rochester, Mich., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1971, Ser. No. 211,202
Int. Cl. F16d *18/32*
U.S. Cl. 64—32 **10 Claims**



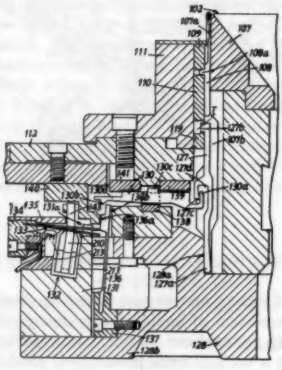
A shielded angular drive assembly such as a drive transmitting joint adapted for connection to the power takeoff shaft of an agricultural vehicle is provided with a shielded externally actuatable quick detachable coupling by which the drive transmitting shaft can be easily connected to and disconnected from the power take-off shaft of a vehicle and to the power in-put shaft of the driven auxiliary unit and in which the mechanism of the coupling is completely enclosed to prevent injury to personnel resulting from inadvertent contact with the coupling while the shaft is rotating and to prevent entanglement of stray objects in the rotating components of the coupling.

3,733,855

ELECTRONICALLY CONTROLLED NEEDLE SELECTION SYSTEM FOR KNITTING MACHINES

Herbert Brian Bliss-Hill, Evington, and Eric William Tewsley, Kirby Muxloe, both of England, assignors to Stibbe Machinery Limited, Leicester, England

Filed Dec. 2, 1970, Ser. No. 94,427
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R **9 Claims**



A knitting machine having individually operable needles, pattern information carrier means movable in sympathy with the machine and an electronically controlled needle selection

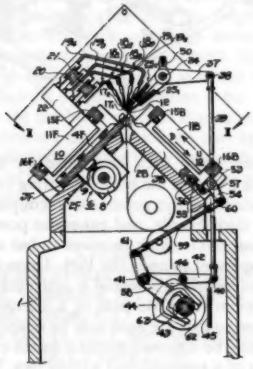
system which, at the dictates of the pattern information and via butts associated with the needles, selectively controls the latter. Each needle has its own magnetic actuator unit. Each such unit includes a light responsive detector responsive to light signals transmitted to it by the pattern information carrier means. A light level detector circuit provides a step voltage output when the level of signal received by the detector exceeds a threshold value. When triggered by this output a monostable circuit produces an output pulse. This pulse energizes an opposing winding associated with a permanent magnet included in the unit to re-direct the attractive force of the magnet. Associated with each unit is an armature normally retained by the magnet but releasable therefrom, to change the path of flux, to exercise selective control over corresponding needle.

3,733,856

FLAT KNITTING MACHINE

Masahiro Shima, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Sakata, Wakayama, Japan

Filed June 16, 1971, Ser. No. 153,566
Int. Cl. D04b *7/00*
U.S. Cl. 66—62 **7 Claims**



A flat knitting machine wherein, besides horizontally movable yarn feeders which are also provided in the conventional flat knitting machine, there are provided above the back or front needle bed vertically movable yarn feeders which feed weft knitting yarns to optional or desired transversely divided portions of optional distance in desired optional courses. Owing to the provisions of said vertically movable yarn feeders, there may be produced not only conventional weft knitted constructions or fabrics such as plain stitch, rib stitch, cardigan stitch or the like and RAHBEN stitch, milano rib or the like, but also various knitted constructions or fabrics having constructions similar to warp knitted ones and variously combinated constructions of such knitted constructions.

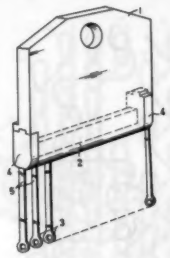
3,733,857

HOLDING DEVICE FOR THE INSTRUMENTALITIES OF AN AUTOMATIC WARP KNITTING MACHINE

Karl Kohl, Chlorodontstrasse 10, 6053 Obertshausen, Germany

Continuation-in-part of Ser. No. 857,529, Sept. 12, 1969, abandoned. This application May 4, 1971, Ser. No. 140,063
Claims priority, application Germany, Sept. 12, 1968, P 17 85 341.7; Mar. 13, 1971, P 21 12 122.2
Int. Cl. D04b *27/02, 27/06*
U.S. Cl. 66—86 R **6 Claims**

A holding device for an automatic warp knitting machine, in which a plurality of knitting needles or needle-like instrumentalities, such as yarn guides, are held in rigid alignment. The device includes an anchor bar in which one end of each needle is embedded. Advantageously, the bar is made of lead, or similar alloy, and is itself embedded in a plastic plate which,



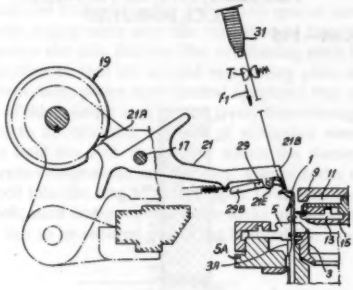
together with the anchor bar and the needles, forms the entire assembly. The ends of the anchor bar are formed into flanges which inhibit dimensional changes in the plastic, thereby maintaining the alignment of the needles.

3,733,858

FEED SYSTEM OF A RESILIENTLY ELONGATED YARN IN A HOSIERY MACHINE AND ESPECIALLY IN A STOCKING MACHINE

Mario Gasparri, Firenze, Italy, assignor to G. Billi & Co. S.p.A., Florence, Italy

Filed Aug. 11, 1970, Ser. No. 62,986
Int. Cl. D04b *15/54*
U.S. Cl. 66—140 R **5 Claims**



A yarn guide provided with a rocking lever for the feeding of yarn, in stretched condition, to circular knitting machines, the guide and the lever having opposed surfaces which permit free passage of the yarn therebetween when the yarn is being fed to the machine and which press upon and clamp the yarn therebetween when feeding of the yarn is discontinued.

3,733,859

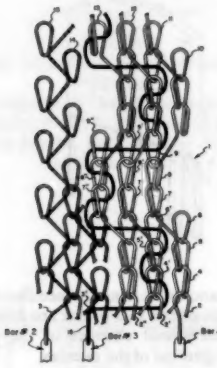
WARP KNIT ELASTIC FABRIC

Christoph J. Wittmann, Newton, N.J., assignor to Darlington Fabrics Corporation, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,761
Int. Cl. D04b *23/06*
U.S. Cl. 66—193 **5 Claims**

An elastic warp knit fabric having two base non-elastic yarns interlooped to form a net with one of the base yarns being knitted for a plurality of successive causes in a single wale and having in addition an elastic yarn laid in the successive courses of the base yarn and crossing over adjacent wales where it is laid in further successive courses whereby the elastic yarn may allow the fabric to stretch and contract in a plurality of directions.

Method for making an elastic warp knit fabric which may stretch and contract in a plurality of directions comprising the steps of knitting two base non-elastic yarns to form a net



where one of the base yarns is knitted into a plurality of successive courses in a single wale and laying in an elastic yarn in the successive courses and crossing the elastic yarn over adjacent wales and laying it into other successive courses.

3,733,860

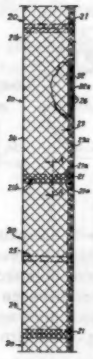
WARP KNIT FOOT COVERING

Otto Engelhard, Forest Hill, N.Y., assignor to Mark Tarnoff and Fleurette Tarnoff, Erdenheim, Pa.

Filed June 1, 1971, Ser. No. 148,593

Int. Cl. D04b *21/00*

U.S. Cl. 66—195 **5 Claims**



A continuous connected series of warp knit foot coverings formed of an endless length of relatively narrow warp knit fabric of wales and courses having relatively short alternate sections of single wall construction knit in continuation of relatively long intervening sections of double wall construction, the double wall fabric section being U-shaped in coursewise cross-section, the single wall fabric sections being adapted to be coursewise severed midway of their walewise length thereby to produce fully formed individual foot coverings of each of the double wall fabric sections and of the severed portions of the single wall fabric sections adjacent thereto. The walewise extending edges of the double wall fabric sections are selvaged and a plurality of walewise extending elastic yarns are incorporated in each wall of the double wall fabric sections adjacent to the edges thereof, the elastic yarns also being incorporated in the single wall fabric sections.

3,733,861

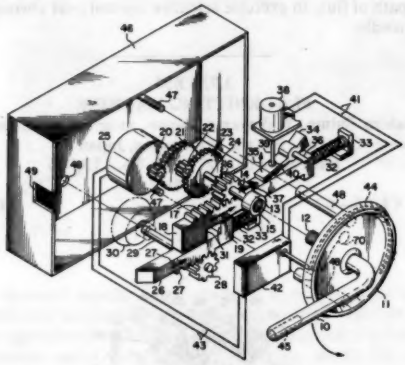
ELECTRONIC RECOGNITION DOOR LOCK

Robert W. Lester, Manhasset, N.Y., assignor to Recognition Devices, Inc., Great Neck, N.Y.

Filed Jan. 19, 1972, Ser. No. 218,948

Int. Cl. E05b *47/06*

U.S. Cl. 70—153 **16 Claims**



An electronic, door lock controlled by a passive transponder used as a key by the person desiring to open the door. A hand-operated electric generator is coupled by a gearing system to the door handle, and generates power to operate a door lock transceiver which receives coded signals from the personal transponder to open the lock. Upon the reception of properly coded signals, a solenoid is activated to withdraw an abutment member from the path of a laterally slidable door bolt mechanism so that the door may be opened. The personal transponder may be disposed within a watch case, or have the size and shape of a conventional writing pen. The system may be radio frequency or ultrasonic.

3,733,862

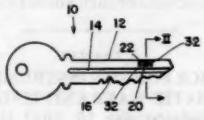
COMBINED MECHANICAL AND PHOTOELECTRIC LOCK

William S. Killmeyer, Youngstown, Ohio, assignor to Elsie Marie Mears; Thomas G. Welsh and Michael J. Kardas, Jr., Youngstown, Ohio, part interest to each

Filed June 22, 1971, Ser. No. 155,573

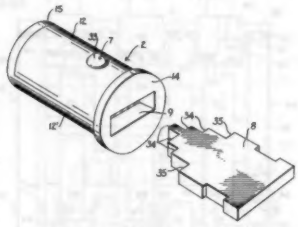
Int. Cl. E05h *47/00*

U.S. Cl. 70—277 **9 Claims**



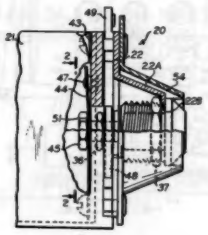
A combined mechanical and photoelectric lock. The mechanical lock is a conventional key operated tumbler lock. One portion of the key is provided either with a series of small holes or with an insert having a pattern of light and dark areas. A light beam is directed through the holes or the insert and is focused by an optical system on a photodetector which determines whether the projected pattern is valid or invalid.

3,733,863
LOCK CYLINDER MECHANISM
Edwin F. Toepfer, 1119-B S. 16th St., Milwaukee, Wis.
Filed Sept. 27, 1971, Ser. No. 183,801
Int. Cl. E05b *19/18, 27/08*
U.S. Cl. 70—363 13 Claims



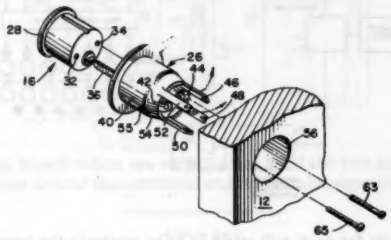
In an elongated rectangular cavity in a cylindrical body, elongated tumblers, in a row across the cavity, are lengthwise slidable parallel to the body axis. Each has longitudinal edges engaging opposite cavity walls, one edge having one notch therein, the other several, lengthwise spaced. Across each of said walls a groove-like recess extends in which the tumblers, when out of unlocking positions, confine a bar. In their unlocking positions the tumblers' notches align to define grooves facing into said recesses and in which the bars are receivable. Balls guided in radial bores in the body engage the medial portions of the bars to be held projected by them when the bars are confined in said recesses.

3,733,864
ANTI-PICK TUMBLER LOCK DEVICE
Harry Greenwald, Whitestone, N.Y., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Apr. 14, 1971, Ser. No. 133,831
Int. Cl. E05b *27/10*
U.S. Cl. 70—363 11 Claims



This disclosure is directed to a tumbler lock having relatively movable lock members and associated locking pins or tumblers which are required to be displaced a predetermined amount to permit relative movement between the complementary locking members in which there is operatively connected to one of the relatively movable lock members a biasing member for imparting a limited biasing force on the movable lock member to resist initial movement of the movable lock member toward the open position of the lock to prohibit a would-be lock picker from setting up the lock pins and picking the lock.

3,733,865
PROTECTIVE COMPONENTS FOR LOCKS
Arthur Vorob, 18 Spring Street, Wallington, N.J.
Filed Feb. 11, 1972, Ser. No. 225,509
Int. Cl. E05b *9/08*
U.S. Cl. 70—370 19 Claims

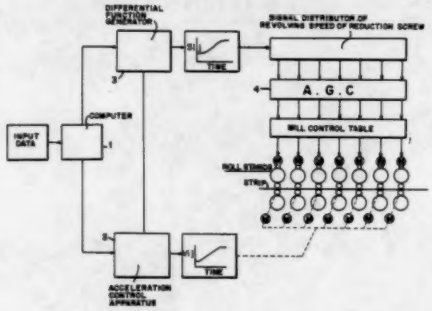


A kit of interrelated protective components for safeguarding rim cylinder locks mounted in doors, such components including (1) a mounting sleeve that fits over a conventional cylinder lock as it extends through a door, (2) reinforcing plates that are seated on the inner side of the door adjacent to the deadbolt for the lock, and (3) adapter means for securing locks of different sizes snugly within the sleeve and flush with the outer side of the door. The sleeve includes an annular lip that fits against the outer side of the door, a substantially cylindrical body, bent-over tabs with apertures therein to receive the elongated mounting screws that engage similar holes in the lock to retain the lock within the sleeve; and spaced ears that are bent into engagement with the rear face of the door to securely anchor the tube thereto. One reinforcing plate has an indented portion so that the second reinforcing plate can be seated therein; both plates have central apertures that enable the tongue of the cylinder lock to pass freely therethrough and screw holes to accomodate the pair of elongated mounting screws that hold the lock in position within the sleeve. The adapter means comprise an annular ring, a shim and a wedge that is forced into the ring to secure same to the body of the cylinder lock; such components enable locks having different sized front lips to be secured within the body of the mounting sleeve.

3,733,866
METHOD OF CONTROLLING A CONTINUOUS HOT ROLLING MILL
Tohru Arimura; Masaru Okado, both of Kawasaki; Yuji Fukuma, and Yoshimitsu Ido, both of Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed June 9, 1971, Ser. No. 151,350
Claims priority, application Japan, June 18, 1970, 45/52579
Int. Cl. B21b *37/00*
U.S. Cl. 72—6 5 Claims

In a method of controlling a continuous hot rolling mill including a plurality of mill stands during acceleration thereof, variations in the screw down pressure (i.e., rolling load), in the speed of the material on the delivery side and in the thickness of the oil film of the back-up roll bearing of each mill stand at the time of acceleration, are anticipated, the width of the finished plates, types and compositions of the materials being rolled, plate gauges on the entrance side, pass speeds of the plates, the instants at which the accelerations are initiated, and accelerations are classified into a plurality of groups, an acceleration controlling schedule for each group that satisfies a relation that the product of the volume and speed of the material is constant is computed by an electronic computer as-

sociated with the rolling mill, and the roll gap and roll peripheral speed are controlled in accordance with the



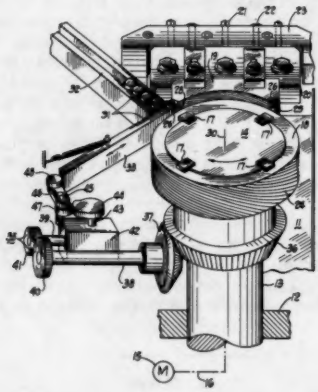
schedule for each mill stand so as to maintain the tension of the material between adjoining stands at a constant value.

3,733,867

THREAD ROLLING MACHINE

Edward A. Prutton, Parma Heights, Ohio, assignor to Prutton Corporation, Cleveland, Ohio

Filed Feb. 14, 1972, Ser. No. 225,849
Int. Cl. B21h *3/04*
U.S. Cl. 72—93 **19 Claims**



A thread rolling machine is disclosed wherein a rotary die has multiple starts of a thread form and workpieces are fed in synchronism so that the starting points of threads on successive workpieces gradually moves around the periphery of the die. By this means all of the thread starts are used in a sequence so that just a few are not subjected to this starting of threading. By this means die life is materially extended. The above description is merely one form of the invention and is not to be construed as limiting on the scope of the invention.

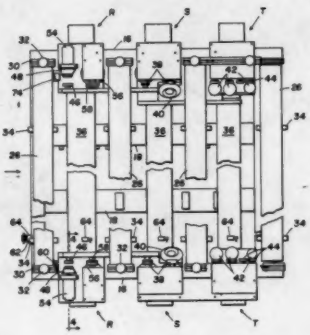
3,733,868

METHOD AND APPARATUS FOR FORMING SHEET MATERIAL

Roger A. Welty, Swisher, Iowa, assignor to Welty-Way Products, Inc., Cedar Rapids, Iowa

Filed Feb. 16, 1972, Ser. No. 226,696
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **12 Claims**

A method of roll forming sheet material so that only selected portions along an edge of the sheet will be formed. The selectivity is accomplished by providing for controlled movement of particular forming rolls into and out of a forming position in such a way that the movement does not interfere with the continuous travel of the sheet through the machine.

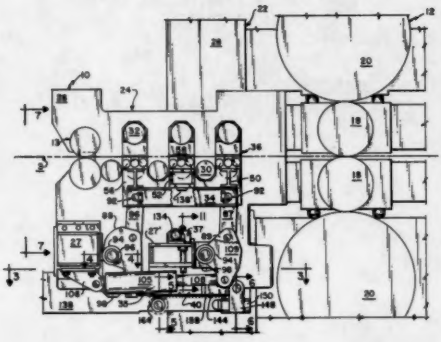


3,733,869

BRIDLING ATTACHMENT FOR A ROLLING MILL

Albert H. Elgert, Walnut Creek, and Lee D. Harmes, Castro Valley, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jan. 31, 1972, Ser. No. 222,166
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 **14 Claims**

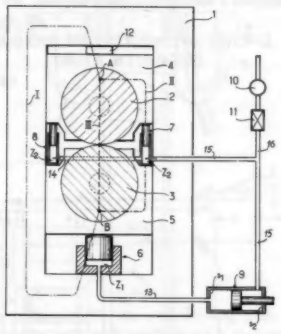


Improved bridling attachment for a rolling mill generally comprised of an underslung and movable carriage with its upper and lower portions respectively disposed above and beneath a lower series of bridle rolls and with the upper carriage portions connected to an upper series of bridle rolls whereby upon advancement of the underslung carriage the upper bridle rolls can be moved relative to the lower bridle rolls for selectively tensioning a fed length of sheet therebetween without injury to the fed sheet and/or attachment such as excessive stretching of the sheet or scratching of a bridle roll.

3,733,870
ROLLING MILL EMPLOYING NON-VARIABLE PRESTRESSING

Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France

Filed Oct. 28, 1971, Ser. No. 193,355
Claims priority, application France, Oct. 28, 1970, 7038962
Int. Cl. B21b *31/32*
U.S. Cl. 72—245 5 Claims



In a rolling mill in each upright there is provided a first hydraulic jack forming part of a hydromechanical clamping system and a pair of second hydraulic jacks forming part of a prestressing device. One side of a cylinder of a plunger piston jack also forming part of the hydromechanical clamping system communicates with the pressure chamber of the first hydraulic jack, while the other side of said cylinder is in continuous communication with the pressure chambers of the second hydraulic jacks associated with the same upright.

3,733,871
METHOD OF EJECTING PLUG FOR ROLLING MILL AND AN APPARATUS THEREFOR

Hiroshi Nagai, Kawasaki; Masatoshi Shirohama; Kenichi Matsumoto, and Haruo Kamimura, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1971, Ser. No. 137,143
Int. Cl. B21b *17/10*
U.S. Cl. 72—209 18 Claims

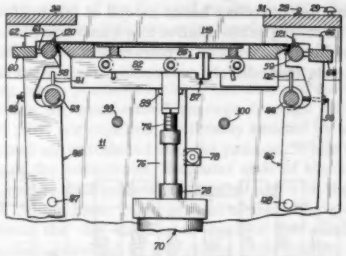
The invention is to pneumatically eject a plug on the end of mandrel after completing steel rolling, thereby to improve the plug treating operation.

3,733,872
ROLLER BENDER FOR OFFSET PRINTING PLATES

Clyde G. Gregoire, 4N194 Briar Ln., Bensenville, Ill.

Filed July 15, 1971, Ser. No. 162,988
Int. Cl. B21d *9/08*
U.S. Cl. 72—213 6 Claims

A bending machine for offset printing plates. The bender includes a table support for the plate to be bent. The table is provided with end edges having contours identical to the desired contours of the end edges of the plate after bending.

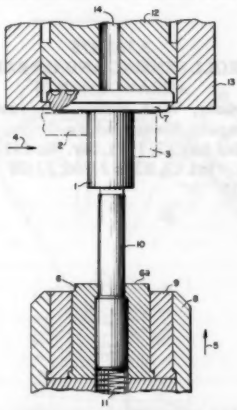


Spring biased rollers are employed to bend the end edges of the plate around the contoured ends of the table support.

3,733,873
METHOD OF AND APPARATUS FOR COMPRESSION FORGING OF COMPONENTS

Ernst Ballmer, Basel, Switzerland, assignor to F.B. Hatebur AG, Basel, Switzerland

Filed June 3, 1971, Ser. No. 149,743
Claims priority, application Germany, June 5, 1971, P 20 27 692.0
Int. Cl. B21d *28/00, 37/16*
U.S. Cl. 72—332 11 Claims



A method of, and apparatus for, compression forging of components in which a bar section is pre-shaped by upsetting in a direction along its axis. The pre-shaped bar section is then supported by its ends between a pair of die faces and is deformed to a shape close to its final shape by transverse flow pressing. The shaped bar section is then ejected from the dies and is transferred to means for removing burrs from the bar section. Preferably at least one of the die faces is sprayed with a cooling fluid after the shaped bar section is ejected.

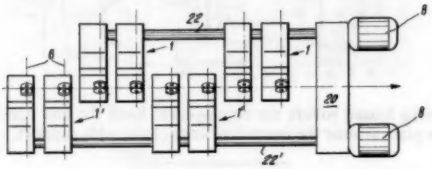
3,733,874
WIRE MILL IN BLOCK FORM

Karl Heinz Spiecker, Duisburg, Germany, assignor to Demag AG, Duisburg, Germany

Filed June 3, 1971, Ser. No. 149,632
Claims priority, application Germany, June 30, 1970, P 20 32 294.5
Int. Cl. B21b *13/12*
U.S. Cl. 72—235 6 Claims

Several substantially identical rolling heads or stands are arranged in series along a wire rolling line with each head having

a driving unit carrying a pair of rotatable rolling disks cooperable with each other to exert a rolling force on the wire, the axes of rotation of the disks of each pair extending parallel to each other at an angle of 45° to the horizontal. The disk axes of one set of rolling heads extend at 90° to those of the other set of rolling heads relative to a transverse plane through the rolling line. The respective pairs of disk axes of at least two rolling heads immediately succeeding each other along the



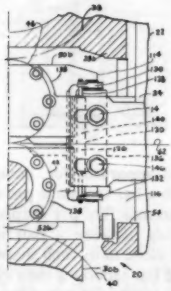
rolling line extend parallel to each other, and these two or more rolling heads are followed by rolling heads having the respective pairs of disk axes extending at right angles to those of the at least two rolling heads. The rolling heads of each set may be driven by a respective driving shaft and the two driving shafts may be driven by associated motors operated in synchronism with each other or otherwise coupled to operate synchronously. Each driving shaft is connected to the driving unit of each head or stand of the associated set.

3,733,875

WORK ROLL SENSING AND/OR BALANCING ARRANGEMENTS

Robert G. Steimer, West Mifflin, Pa., assignor to Mesta Machine Company, Homestead, Pa.

Filed July 12, 1971, Ser. No. 161,540
Int. Cl. B21b *37/00, 31/08*
U.S. Cl. 72—237 **20 Claims**



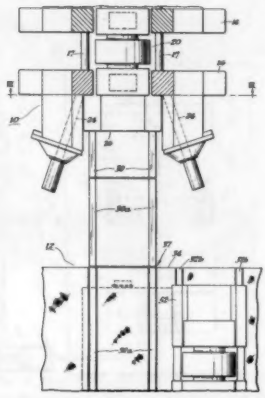
In a rolling mill stand having housing means, window means in the housing means, and a pair of work rolls having bearing chocks for rotatably supporting the ends of the work rolls in the window means, the disclosed combination comprises at least one extension on each of the bearing chocks, position sensing means disposed generally between a pair of the work roll extensions which are respectively and spacedly disposed on a juxtaposed pair of the work roll chocks, means for removably mounting the sensing means on the mill stand, and means for bearingly and respectively engaging movable components of the sensing means with the pair of roll chock extensions for movement therewith.

3,733,876

MILL ROLL CHANGING ARRANGEMENT

Joseph L. Hlafcsak, Whitehall, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Division of Ser. No. 112,336, Feb. 3, 1971, Pat. No. 3,691,809.
This application July 7, 1972, Ser. No. 269,753
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **12 Claims**



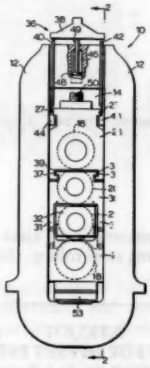
A quick-replaceable roll assembly for a rolling mill stand, said assembly comprising an inner carriage, rail engaging wheels rotatably mounted on said carriage, means for mounting a lower roll and a pair of bearing structures therefor on said carriage, said means comprising a number of balancing plungers reciprocatably mounted on said carriage and engaging said bearing structures, and means for mounting an upper roll and bearing structures therefor on said assembly in faced engagement with said lower roll.

3,733,877

MILL ROLL CHANGING ARRANGEMENT

Michael Frank Field, Dollard des Ormeaux, Quebec, Canada, assignor to Dominion Engineering Works Limited, Montreal, Canada

Filed Jan. 4, 1972, Ser. No. 215,312
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **7 Claims**



A rolling mill having a roll changing sledge is provided with latching means connecting a lower set of chocks with an upper set to permit raising of a lower roll with the upper roll, and normally disengaged load transfer posts extending between

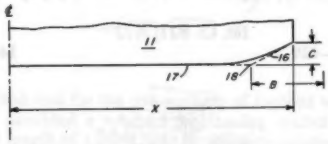
one set of chocks and a lower set of chocks to permit transfer of the weight of the upper roll to the sledge for simplified and rapid roll changing. The load transfer posts permit the use of different sizes of working rolls, the posts being repositioned after separation of the rolls to a roll supporting position by minor axial displacement of the sledge. The arrangement is well suited to automated roll changing.

3,733,878

ROLL END RELIEF FOR ROLLING MILLS

Arvid N. Anderson, and Richard H. Batterman, both of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 20, 1971, Ser. No. 190,902
Int. Cl. B21b *27/00*
U.S. Cl. 72—241 **7 Claims**



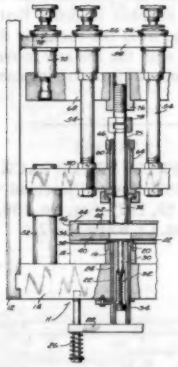
A roll for a rolling mill, the roll having end reliefs that reduce substantially roll end spalling and increase substantially the range of roll contour control by roll bending. The end reliefs of the roll comprise two symmetrically located, smoothly curving exponential functions extending either (1) from the center line of the roll face to the two ends of the roll, or (2) from two locations intermediate the ends of the roll and the roll face center line to the ends of the roll.

3,733,879

CONJUGATE CAM ARRANGEMENT AND PUNCH PRESS UTILIZING SAME

Robert F. Sellman, 9534 North 60th Street, Milwaukee, Wis.

Filed July 28, 1971, Ser. No. 166,835
Int. Cl. B21d *31/02*; B21j *9/18*
U.S. Cl. 72—328 **13 Claims**



Both the blanking punch and the forming punch (which telescopes inside the blanking punch) are reciprocatively driven by separate cam assemblies. Each cam assembly includes an eccentric plate drive cam which cooperates with two plate cam followers to provide a reciprocating stroke to the punches. The two drive cams are symmetrically arranged on a common drive shaft so that the outer ends of the two punches remain substantially flush with each other during the blanking stroke and during dwell at the top of the back stroke. The forming punch drive cam has separate conjugate cam surfaces which selectively engage the cam followers cooperating therewith. One of these cam surfaces includes a lobe which imparts the additional stroke to the forming punch required for forming the completed parts while the blanking punch is in dwell at the bottom of the forward stroke. A slot relief in the backward motion cam follower accommodates the lobe so the forming punch is permitted to dwell at the top of the backstroke.

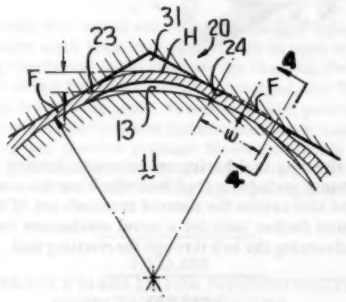
A ceiling plate, positioned above the dies and having side walls, defines an open-ended passage through which the completed parts are expelled, preferably assisted by a stream of pressurized air introduced into the passage. While in dwell at the top of the backstroke, the outer ends of blanking and forming punches are flush with each other and with the underside of the ceiling plate. Impingement of the completed parts ejected from the die cavities is against the substantially smooth surface provided by the ceiling plate and the bottom ends of the punches thereby minimizing ricocheting of the parts.

3,733,880

APPARATUS FOR AND METHOD OF FACILITATING THE STRIPPING OF CANS FROM A PUNCH AND THE ARTICLE FORMED THEREBY

Ants Hansson, Evanston, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,374
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **17 Claims**



This disclosure relates to apparatus for and a method of facilitating the stripping of a can body or a like cup-shaped article from a wall ironing punch by applying radially directed circumferentially spaced forces against the can body exterior as it moves with the punch whereby lateral or circumferential flow of the can body material is produced along axially extending portions of the can body which increases the circumferences of the can body to facilitate the subsequent stripping thereof from the punch.

3,733,881

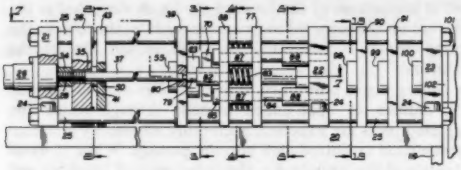
METHOD AND APPARATUS FOR MAKING DEEP DRAWN METAL SHELLS

Donald C. Grigorenko, Franklin County, Ohio, assignor to Shape Farm, Inc., Columbus, Ohio

Filed Sept. 28, 1970, Ser. No. 75,950
Int. Cl. B21d *22/24*
U.S. Cl. 72—349 **3 Claims**

A method and machine for making a comparatively deep metal shell in which a piece of sheet metal is successively cut or blanked to desired size and shape, drawn in one direction into cup shape, redrawn in the opposite direction into an elon-

gated shell, and then ironed one or more times to further elongate and decrease the wall thickness of the shell, all such steps



being performed by movement of the workpiece along a linear path and in a single continuous working stroke of the machine.

3,733,882

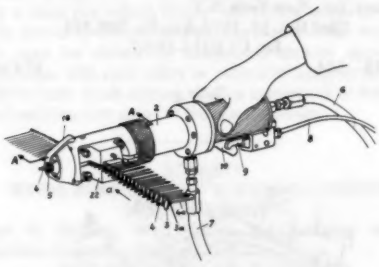
BLIND RIVETTING TOOL WITH AUTOMATIC LOADING MEANS

Jean-Pierre Klein, Haut-Rhin, France, assignor to Rivtac Blindnieten, A.G., Bale, Switzerland

Filed Feb. 9, 1971, Ser. No. 113,911

Int. Cl. B21j *15/20*

U.S. Cl. 72—391 **16 Claims**



A blind rivetting tool having an automatic loading means. The said means includes a feed belt which carries rivets into the gun, and also carries the sheared mandrels out of the gun. The invention further includes a novel mechanism for intermittently advancing the belt through the rivetting tool.

3,733,883

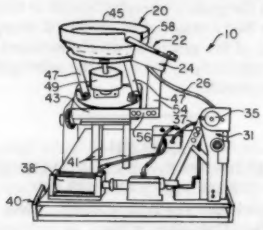
CRIMPING APPARATUS

Leonard J. Kaczmarek, Wonderlake, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Feb. 8, 1971, Ser. No. 113,341

Int. Cl. B21d *43/20*; B23q *7/10*

U.S. Cl. 72—402 **6 Claims**



Crimping apparatus for feeding and crimping electrical contacts or the like of a type having a hollow sleeve portion at one end and a reduced diameter portion at the other end. The apparatus includes a crimping mechanism which indents the sleeve portion to fix it to a wire inserted therein. A reciprocable plunger moves the contact into the crimping mechanism and is mounted within a tube having a slot therein through which a contact is dropped. A vibratory feed bowl is positioned above the plunger and supplies the contacts seriatim to an orienting mechanism which includes an arm pivotally mounted on a base plate to receive the contacts one-by-one from the bowl and transfers them to an orienting slot in the plate to drop the contacts with a predetermined orientation of the sleeve and pin portions of the contact into a feed tube for guiding the properly oriented contact to the slot in the plunger tube.

3,733,884

FORGING PRESSES WITH EJECTOR MEANS

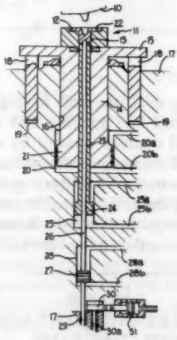
John Foster, and Geoffrey Wilson, both of Denton, Manchester, England, assignors to B. & S. Massey Limited, Manchester, England

Filed July 1, 1970, Ser. No. 51,536

Claims priority, application Great Britain, July 3, 1969, 33,510/69

Int. Cl. B21j *9/12*

U.S. Cl. 72—429 **14 Claims**



An upsetting or forging machine having at least one pair of relatively movable dies, one of which is arranged to carry out a circular rocking motion about a point related to the center of one of the dies of the die set, the other die including at least one linearly movable element in order that the die can be moved towards or away from the rockable die, there being a ram means associated with the linearly movable die in order that a workpiece after upsetting or forging can be ejected from the die set.

3,733,885

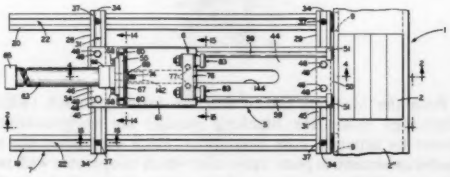
AUTOMATIC PRESS BRAKE BACK GAUGE

Edwin Henry Brauer, 3876 Silsby, Cleveland, Ohio

Filed Apr. 19, 1971, Ser. No. 138,459

Int. Cl. B21d *11/22*

U.S. Cl. 72—461 **27 Claims**



A back gauge for a press brake having a stop assembly controlled by an indexing roller. The stop assembly is positioned adjacent a press brake die and punch by a pneumatic cylinder actuated in response to the position of the press brake ram.

The indexing roller controls the positioning of the stop member at pre-selected distances from the press brake die to control the position of a work piece on the press brake die.

3,733,886

TOOTHED TOOL FOR WORKING OF GEARS

Herbert Loos, Munich, Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Germany

Filed Mar. 4, 1971, Ser. No. 120,991

Claims priority, application Germany, Mar. 7, 1970, P 20 10 963.1

Int. Cl. B21d *17/00*

U.S. Cl. 72—469 **4 Claims**

A toothed tool for the roll-working of toothed workpieces. There is provided a toothed tool having spaced serrations along the length of a tooth, said serrations extending from the dedendum to the addendum of the tool teeth whereby said serrations define a plurality of spaced ribs on the tool teeth. Said serrations are arranged in such a manner that the ribs are offset on one tooth with respect to the corresponding ribs on an adjacent tooth. The relative width and spacing of the serrations and ribs are such that the sum of widths of the ribs on one tooth flank is equal to the sum of the width of ribs on all, or at least most, of the other tool flanks facing in the same direction.

3,733,887

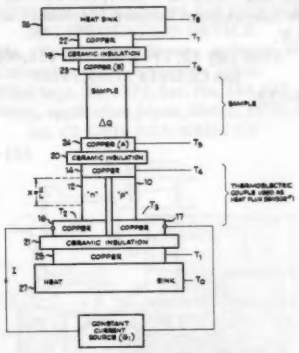
METHOD AND APPARATUS FOR MEASURING THE THERMAL CONDUCTIVITY AND THERMO-ELECTRIC PROPERTIES OF SOLID MATERIALS

Marland L. Stanley, Idaho Falls, Idaho, and Allen D. Reich, Des Plaines, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,265

Int. Cl. G01n *25/18*

U.S. Cl. 73—15 A **4 Claims**



A method and apparatus for measuring the thermal conductivity, surface heat transfer coefficients and the thermo-electric power of materials, involving the employment of the Peltier effect to establish the temperature difference across, while simultaneously measuring the rate of heat flow through the investigated sample material.

A predetermined current is applied to a thermoelectric couple sensor to produce a temperature difference across the thermoelectric couple sensor by controlling the temperature of the cold junction of the sensor. The thermal conducting body is engaged with the cold junction of the sensor. The current is then adjusted by a predetermined amount to re-establish the temperature differential. By measuring the change in the current required to restore the temperature differential, the thermal conductance of the body may be determined.

3,733,888

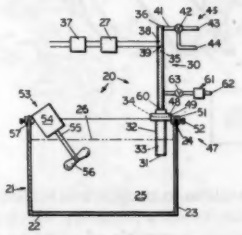
FREENESS TESTING APPARATUS AND METHOD FOR OPEN CONTAINERS

Donald W. Danforth, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Filed Apr. 28, 1971, Ser. No. 138,075

Int. Cl. G01n *33/34*

U.S. Cl. 73—63 **9 Claims**



A freeness detector of the vertical stand pipe type, used on closed paper stock lines, is combined with an open vessel containing groundwood paper stock or the like with the open intake end of the freeness detector submerged, but the screen above the level of the stock. Sub-atmospheric pressure in the filtrate chamber permits atmospheric pressure to raise filtrate for testing and positive pressure blows the filtrate and mat downwardly. The apparatus preferably also includes an agitator in the stock and back flushing liquid passages in the detector.

3,733,889

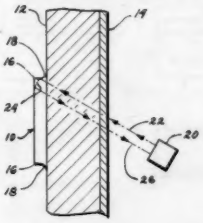
REFERENCE MARKER FOR NONDESTRUCTIVE INSPECTION TECHNIQUES

Edward S. Proctor, Jr., Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 26, 1970, Ser. No. 67,152

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.5 **4 Claims**

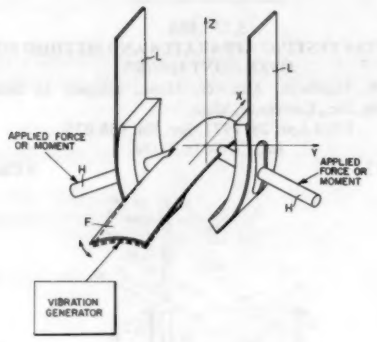


A reference marker for use in conjunction with volumetric inspection techniques on nuclear reactor pressure vessels. A block of material having a sharp corner geometry is provided at particular locations on the vessel structure to be inspected. The block of material then serves as a physical location reference marker and/or means for use in calibration of the volumetric inspection device.

3,733,890
APPARATUS FOR LINEARLY CONVERTING A MECHANICAL QUANTITY INTO A FREQUENCY

Gunther Friedrich Landvogt, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1971, Ser. No. 146,170
Claims priority, application Germany, May 26, 1970, P 20 25 654.6
Int. Cl. G01n 3/32
U.S. Cl. 73—67.2 8 Claims

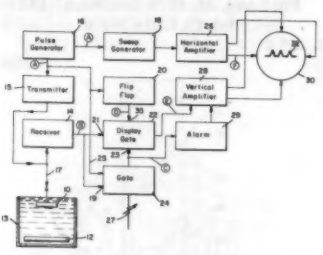


The invention relates to an apparatus for linearly converting a mechanical quantity into a frequency, which apparatus comprises a body which is capable of vibrating and is set into vibration at its resonant frequency by a vibration generator, a device for changing the resonant frequency by changing the bending stiffness of the body, and a device for indicating the frequency, the said body being a leaf spring and the quantity to be measured causing bending of this leaf spring in a transverse direction.

3,733,891
GATING SYSTEMS USED WITH NONDESTRUCTIVE MATERIAL TESTERS AND THE LIKE

Frederick G. Weighart, Sunset Cove, Conn., assignor to Automation Industries, Inc., Century City, Calif.

Continuation-in-part of Ser. No. 839,497, July 7, 1969, abandoned. This application May 6, 1971, Ser. No. 140,854
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 10 Claims

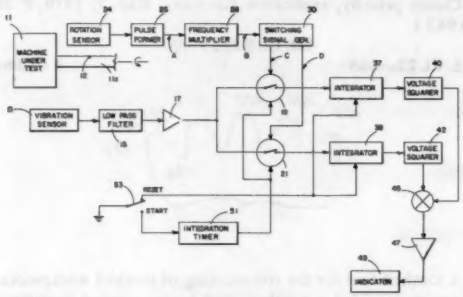


Herein described is an ultrasonic nondestructive test system which includes gating apparatus for alternatively dis-playing a full return video and auxiliary information. A dis-play gate which is responsive to the receiver circuit transfers echo return signals to a display on a cathode ray tube. A flip-flop is responsive to a pulse generator which alternately energizes the display gate so that at one time a full video sig-nal is displayed and at alternate times auxiliary information is displayed.

3,733,892
SYNCHRONOUS VIBRATIONAL ANALYZER FOR ROTATING MACHINERY

Lyle Vance Rennick, Mission Viejo, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 3, 1972, Ser. No. 240,617
Int. Cl. G01n 29/00
U.S. Cl. 73—71.4 8 Claims

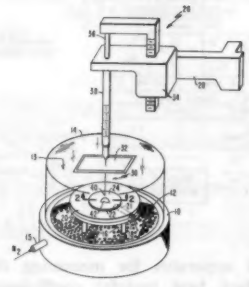


A pulse signal is generated which is a precise multiple of the rotation frequency of a machine to be tested. A sensor is utilized to generate an electrical signal in accordance with vibration developed in the machine with its rotation. Low frequency components of this signal are filtered out therefrom and these filtered signals fed to a pair of switching circuits. The pulse signals in accordance with the rotation of the machine are fed to a switching signal generator where quadrature related signals synchronized with the machine rotation are developed. These quadrature related signals are fed to the switching circuits as the switching control therefor, so as to provide samplings of the vibration signals in quadrature relationship. The outputs of the switching circuits are each integrated and squared, the squared signals then being summed. These summed output signals are then fed to an indicator which provides the indication of the amplitude of vibrational components at the machine rotation frequency or a harmonic thereof.

3,733,893
SURFACE CHARACTERIZATION

Harry G. Bickford, Essex Junction; Leonard A. Kieny, Jr., Shelburne, and Lewis G. Peltier, Jr., Milton, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 12, 1971, Ser. No. 161,468
Int. Cl. G01n 13/00, 19/08
U.S. Cl. 73—73 9 Claims



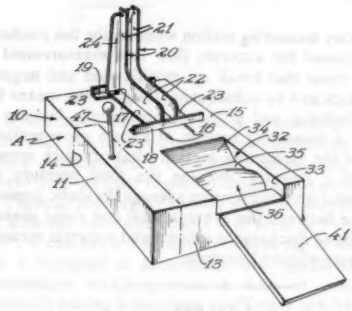
An apparatus for characterizing a surface, such as on a semiconductor wafer, includes a heater for establishing controlled temperature conditions, a nitrogen input, and a desic-

cant for establishing a controlled atmosphere at the surface. A dispensing mechanism provides a known quantity of a liquid in a droplet on the surface. The surface is characterized by determining the evaporation rate of the liquid from the surface under the controlled conditions established by the apparatus. This is usually done by measuring the time for complete evaporation of the droplet to take place. The method is especially suited for characterizing the photoresist application characteristics of semiconductor wafer surfaces.

3,733,894
MOTORCYCLE DYNAMOMETER

Christian W. Dahl, Minneapolis, Minn., assignor to Hartzell Corporation, St. Paul, Minn.

Filed Feb. 11, 1972, Ser. No. 225,558
Int. Cl. G01m *15/00*
U.S. Cl. 73—117 **8 Claims**

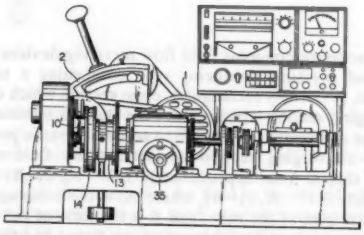


An apparatus for indicating the power output of a motorcycle or the like includes a box-like structure including means for clamping the front wheel in an upright plane while the rear of the motorcycle is free to swing about the steering axis. A barrel-shaped roller on a horizontal axis supports the driven wheel, the center of which is generally on the upright plane. As the motorcycle engine drives the driven wheel this wheel automatically centers with the roller. A dynamometer is driven by the roller.

3,733,895
HIGH SPEED FATIGUE TESTER OF SMALL COILED SPRING WITH VIBRATIONLESS ROTATION-RECIPROCATION DEVICE

Kenjiro Ishida, Hamamatsu, Japan, assignor to President Shizuoka University, Ohya, Shizuoka, Japan

Filed Sept. 28, 1971, Ser. No. 184,602
Claims priority, application Japan, Oct. 1, 1970, 45/86496
Int. Cl. G01n *3/26*; G01l *1/04*
U.S. Cl. 73—161 **1 Claim**

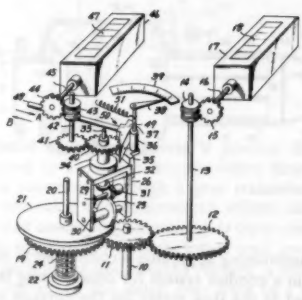


A coil spring expansion and contraction apparatus of high speed fatigue tester provides a crank pin to support one end of the spring. The crankshaft is supported by eccentric collar and connected thereto by gears including eccentric gear. Balance mass means are determined to effect theoretical balancing of the apparatus.

3,733,896
COMPUTING APPARATUS FOR A CALORIMETER

Masahiro Soya, Kawasaki; Kensuke Aizawa, Yokohama, and Hiroaki Hasegawa, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa-Ken, Japan

Filed Sept. 14, 1971, Ser. No. 180,389
Claims priority, application Japan, Sept. 14, 1970, 45/80798
Int. Cl. G01k *17/12*
U.S. Cl. 73—193 R **7 Claims**

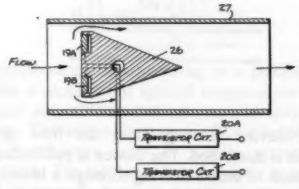


In a calorimeter, a computing apparatus in which a rotating member is rotated in proportion to a flow quantity of a heat medium, a roller in abutting contact with the rotating member and being rotated by the rotation thereof, means displaces the roller in a pivotal motion responsive to the variation of temperature difference of the heat medium, and an indicator integrating and indicating heat quantity by obtaining the rotation of the roller. The rotational velocity of the roller is changed responsive to a change of the angle between the tangential direction of the rotating member and the axis of rotation of the roller at a point at which the roller is in contact with the rotating member. Such change of the angle is due to the variation of the temperature difference of the heat medium.

3,733,897
SENSOR ASSEMBLY FOR VORTEX-TYPE FLOWMETERS

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Oct. 14, 1971, Ser. No. 189,232
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 B **5 Claims**



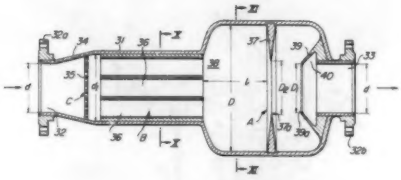
A sensor assembly for swirl, vortex and other types of hydrodynamic metering devices in which fluidic variations are sensed to afford an indication of flow rate or other fluidic values. The assembly is constituted by a heated transistor chip which is exposed to the fluid being sensed and is cooled thereby, the transistor being connected to an external circuit

to define a direct-current amplifier whose base current is substantially constant, but whose collector current varies as a function of the heat extracted from the transistor by the fluid, thereby producing a corresponding output signal.

3,733,898
FLOW CONDITIONING APPARATUS

Hiroshi Yamamoto, Kanagawa; Kuniteru Okuda, Machida, and Hiroaki Nomoto, Koganei, all of Japan, assignors to Oval Engineering Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1971, Ser. No. 135,018
Claims priority, application Japan, June 5, 1970, 45/48188; Sept. 26, 1970, 45/83896; Nov. 24, 1970, 45/105245
Int. Cl. G01p *5/14*
U.S. Cl. 73—198 8 Claims

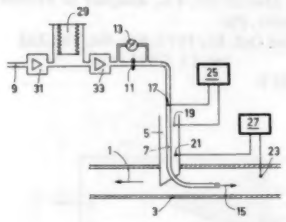


A flow conditioning apparatus is connected to the inlet of a flow meter in a conduit system for conditioning the flow of a fluid supplied to the flow meter for the purpose of measurement of the flow rate. The apparatus comprises a device for uniformalizing the velocity distribution of fluid flow, and this device is combined with a vortex regulator and a flow straighter for more effectively conditioning the fluid flow.

3,733,899
DEVICE FOR MEASURING THE FLOW RATE OF A LIQUID

Michel Joseph Auphan, Courbevoie, and Jean Robert Perilhou, Bourg-la-Reine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 144,008
Claims priority, application France, May 25, 1970, 7018962
Int. Cl. A61b *5/02*; G01p *5/10*
U.S. Cl. 73—204 2 Claims

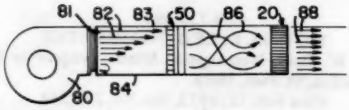


An improved device for regulating the flow of liquid through a conduit is described. The device is particularly useful in the regulation of blood flowing through a blood vessel. Unlike previous devices of this type the device described herein is readily usable on blood vessels situated well below the skin. The device comprises an injection duct for an auxiliary liquid which is mixable with the flowing liquid and thermocouples for measuring temperature differences, characterized in that the device is provided with means for the pulsating supply of the auxiliary liquid.

3,733,900
FAN CAPACITY MEASURING STATION

Kenneth W. De Baun, Novato, Calif., assignor to Air Monitor Corporation, Santa Rosa, Calif.

Filed Nov. 22, 1971, Ser. No. 201,127
Int. Cl. G01f *1/00*
U.S. Cl. 73—212 5 Claims

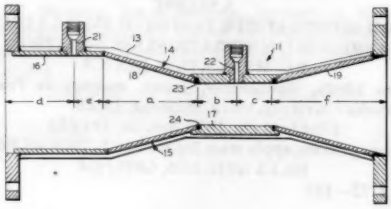


A fan capacity measuring station wherein the fan discharge is first conditioned for accurate flow rate measurement by fixed mixing vanes that break up stratification and negative pressure pockets and by subsequent straightening means that eliminate turbulence and produce substantially laminar air flow through a measuring section of known cross-sectional area. Then in the measuring section total pressure sensors, manifolded in a traverse, average the total pressure and manifolded static pressure sensors average the static pressure. The difference between the average total and static pressure of the conditioned discharge is a direct and accurate measurement of flow rate within±1 percent.

3,733,901
FLOW METERING DEVICE OF THE PRESSURE DIFFERENTIAL PRODUCING TYPE

Dezsoe Halmi, Cranston, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 144,899, May 19, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 279,153
Int. Cl. G01f *1/00*
U.S. Cl. 73—213 7 Claims

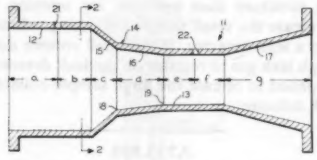


The disclosure concerns fluid flow metering devices of the differential pressure producing type comprising a tube of polygonal, preferably rectangular, cross section which defines a converging section which guides the fluid to a throat. The throat has a pressure tap located to sense true static pressure, and the converging section accelerates the fluid over a distance that is from approximately 2.7 $A_t(1-B)$ to approximately 3.1 $A_t(1-B)$, where A_t is the cross sectional area of the inlet of the tube, and B is the ratio of the square roots of the cross sectional areas of the throat and the inlet. This flow metering device affords a discharge coefficient comparable to that of the classical or Herschel Venturi, and a "2 sigma" accuracy of ±1 percent.

3,733,902
MINIMUM LENGTH HIGH QUALITY DIFFERENTIAL PRESSURE PRODUCING FLOW METER

Dezsoe Halmi, Cranston, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 144,898, May 19, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 279,154
Int. Cl. G01f 1/00
U.S. Cl. 73—213 10 Claims

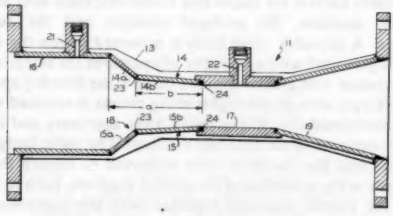


The disclosure concerns fluid flow metering devices of the differential pressure producing type comprising a tube which defines a throat and a converging section for guiding fluid thereto from an inlet region of larger cross section. The tube has a special converging section which accelerates the fluid at two different rates and causes it to form two vena contractas before it reaches a true static pressure tap in the throat. The tube is designed in accordance with specified dimensional relationships which provide a tube of minimum length preferably having a discharge coefficient of 0.98 and a "2 sigma" accuracy tolerance between ±0.5 percent and ±1 percent depending upon whether the tube has a circular or a polygonal cross section.

3,733,903
DIFFERENTIAL PRESSURE PRODUCING FLOW METER

Dezsoe Halmi, Cranston, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 144,802, May 19, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 279,155
Int. Cl. G01f 1/00
U.S. Cl. 73—213 6 Claims

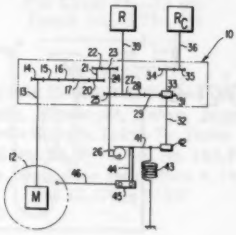


The disclosure concerns fluid flow metering devices of the differential pressure producing type comprising a tube of polygonal, preferably rectangular, cross section which defines a converging section which guides fluid to a throat. The converging section accelerates the fluid to throat velocity in two carefully controlled phases, each of which is terminated by the formation of a vena contracta, and the throat is equipped with a tap which senses true static pressure. The flow metering device affords a discharge coefficient on the order of 0.98 and preferably has a "2 sigma" uncalibrated accuracy of ±1 percent.

3,733,904
TEMPERATURE COMPENSATED GAS METER REGISTER

Joseph A. Bonner, Pittsburgh, and Howard J. Evans, New Kensington, both of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 4, 1971, Ser. No. 103,365
Int. Cl. G01f 3/00; F01f 15/04
U.S. Cl. 73—233 9 Claims

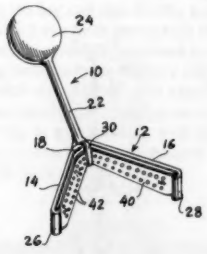


A gas meter assembly wherein a positive displacement meter disposed in a conduit through which flows gas to be measured is connected through a gear transmission unit to drive both corrected and uncorrected volume indicating registers, the unit comprising an initial gear train common to the drive to both registers, a first branch gear train connecting the initial gear train to the uncorrected register, a second branch gear train connecting the initial gear train to a shaft in the drive to the corrected register and a cam actuated unidirectional clutch connected to impart additive rotation to that shaft in accord with the gas temperature in the conduit, for continually automatically modifying the drive to said corrected register to correct the indicated volume to a predetermined base temperature.

3,733,905
CHEMICAL THERMOMETER AND HOLDER

Norman C. Bremer, 608 East Seneca Street, Ithaca, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,396
Int. Cl. G01k 11/12, 1/14
U.S. Cl. 73—356 6 Claims



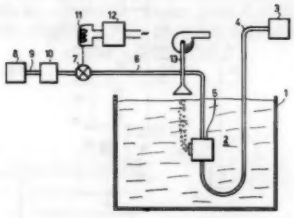
A thermometer incorporating on a flexible and disposable substrate a plurality of spaced temperature-sensitive chemicals which are calibrated to indicate a temperature in the clinical range. The substrate is secured by a holder having a bifurcated mouthpiece and a handle extending from the mouthpiece. The bifurcated mouthpiece is generally V- or U-shaped so as to fit beneath a patient's tongue while carrying the substrate. The temperature-sensing chemicals on the substrate are activated and the holder and substrate are withdrawn for temperature reading. The substrate is disposed and a new one placed in the holder. It is a feature of the invention that there be a minimum surface area contact between the holder and the substrate to minimize heat exchange between them.

3,733,906

METHOD AND APPARATUS FOR THE CONTINUOUS WITHDRAWAL OF SAMPLES FROM INDUSTRIAL PROCESS BATHS OR THE LIKE FOR ANALYSIS

Robert W. Barnhardt, Concord, and William J. Grubbs, Charlotte, both of N.C., assignors to Zellweger AG, Uster, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,983
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 B **8 Claims**



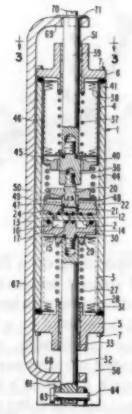
A method and apparatus is disclosed for drawing a filtered sample from a solution or bath, especially an industrial process bath, for continuous or continual analysis. This invention involves periodically blowing a suitable pressurized fluid medium compatible with the bath, that is one which does not affect the sampling process, typically air, although other media can be employed, into the sampling bath on the downstream side of a filter. Backwash of the filter with air initially forces the clean filtered sample back through the filter, then such pressurized fluid medium itself is forced back through the filter for a brief time, after which the flow of such fluid medium is stopped, allowing normal liquid filter flow to resume.

3,733,907

VALVE STRUCTURE FOR COLLECTING MULTIPLE SAMPLES

Walton Ellis Briggs, Lynnfield, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 24, 1972, Ser. No. 220,123
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R **9 Claims**



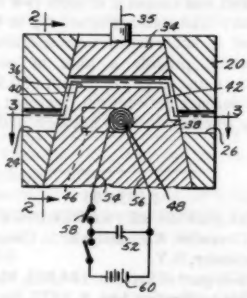
A valve structure for collecting multiple samples of a fluid comprises a housing forming an inlet chamber and an outlet chamber separated by a valve seat partition between the chambers. The partition has a first central passage therethrough and a second passage therethrough radially outward of the first passage. A valve is located in the inlet chamber and seats against the partition to close one side of each of said passages. In the outlet chamber a first valve seats against the partition to close the other end of said center passage. A third valve is located in said outlet chamber to seat against said partition and close the other end of said outward passage. The first valve has an annular recess in its face which communicates with said outward passage and together with said outward passage forms a large sample collecting volume. The center passage forms a small sample collecting volume. Means are provided for opening and then closing the first valve to fill both of said sample collecting volumes with sample gas while the second and third valves are closed. The operating structure then provides for opening the second valve to release the small sample collecting volume for transmission to a leak detector. If the small volume does not contain enough leak gas to register on the leak detector, the third valve is opened to release the large sample collecting volume to the leak detector.

3,733,908

SAMPLING VALVE AND COMPOUND DETECTION SYSTEM

Amos Linenberg, Rehovot, Israel, assignor to Hydronautics-Israel Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 62,215, Aug. 19, 1970, Pat. No. 3,675,466. This application Apr. 28, 1971, Ser. No. 138,267
Int. Cl. G01n *1/22*
U.S. Cl. 73—422 GC **9 Claims**



A sampling valve is provided for use with a chromatographic column or any other appropriate detection device for use in the detection of compounds in an ambient medium, such as air. The valve includes a housing having a plurality of apertures therein for respective communication with at least a carrier medium, the ambient medium and the detection device. A movable valve body is mounted within the housing and is provided with a plurality of apertures for selective communication with predetermined ones of the housing apertures. A platinum wire or other absorbing means is retained within a predetermined one of the valve body apertures and is selectively exposed to the ambient medium. The valve body is then moved and the platinum wire is heated to desorb the compounds in the presence of the carrier medium, such as helium, and the carrier medium, together with the compounds, are passed through the detection device to enable detection of the presence of the compounds.

3,733,909

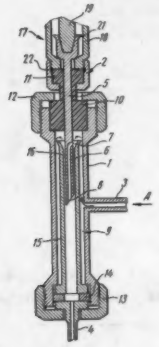
APPARATUS FOR INJECTING A SAMPLE INTO A GAS CHROMATOGRAPH

Jury Nikolaevich Golovistikov, Bolshoi Kondratievsky pereulok, 10, kv. 52, Moscow, U.S.S.R.

Filed Mar. 10, 1972, Ser. No. 233,524
Int. Cl. G01n *1/28*
U.S. Cl. 73—422 GC **8 Claims**

An apparatus for injecting a sample into a gas chromatograph, has a sample evaporation chamber, wherein there is

reciprocably received a sample-injecting pipette in the form of a needle with an internal longitudinal capillary passage for accommodation of a sample, having an inlet and an outlet. The inlet of the passage is made through the external side wall of the needle. The sample evaporation chamber is hermetically sealed from the ambient atmosphere with the help of sealing means; it communicates with the supply source of the carrier gas of the gas chromatograph and with the chromatographic

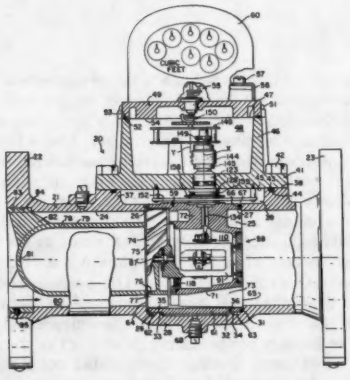


column of this chromatograph. The sample evaporation chamber incorporates a member for guiding the carrier gas into the capillary passage of the needle. The sealing means includes a septum made of an elastic material and a sleeve. The septum is received at an end portion of the sample evaporation chamber, where the needle is introduced, whereas the sleeve envelopes the external surface of the needle. The needle is made of a material which can pierce the septum, as a sample is being injected into the sample evaporation chamber.

3,733,910
TURBINE METER ASSEMBLY

Howard J. Evans, Kensington, Pa.; Joseph P. Lofink, Lancaster, Ohio, and Joseph A. Bonner, Pittsburgh, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 838,890, July 3, 1969, abandoned. This application July 14, 1971, Ser. No. 162,639
Int. Cl. G01f *3/00*
U.S. Cl. 73—231 R **19 Claims**



A turbine meter has a measuring chamber assembly complete with rotor and a magnetic drive train to an external register mounted on a detachable cover plate mounted over a side opening in a hollow-meter body. The measuring chamber assembly has a special slide guide fit and internal seating on the body, and it can be inserted into the body only in proper orientation in the flow path. An adapter plate on the inside of the cover positions the measuring chamber assembly relative to the cover plate. A special sealed casing magnetic drive includes rotatably mounting the driver and driven magnets on common shaft means oppositely projecting from the casing end wall.

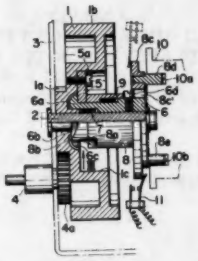
ERRATUM

For Class 73—23 see:
Patent No. 3,734,489

3,733,911
TIME SWITCH APPARATUS

Yasuhisa Matsuda, Mitaka-shi, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-To, Japan

Filed Oct. 28, 1971, Ser. No. 193,292
Claims priority, application Japan, Nov. 4, 1970, 45/109416
Int. Cl. G05g *21/00*
U.S. Cl. 74—3.52 **4 Claims**



A time switch apparatus wherein the switch can positively and instantaneously perform changeover action twice in succession at small intervals of time therebetween, exactly at a pre-set time with no relevance to either the vibration applied thereto externally or to the site where this apparatus is placed, by the arrangement comprising a time-setting ring having a lug and being rotatably mounted on a stationary shaft, a charge cam cylinder rotatably as well as thrustwardly slidably mounted on the stationary shaft and having a flange portion slidably contacting the lug and also having a cam portion and a recessed portion which are both formed on the flange portion, and a switch-actuating member mounted on the charge cam cylinder for sliding movement permitted only in the direction of thrust and operatively coupled to a clock mechanism and having an end face portion designed so as to slidably receive therebetween the lug in cooperation with the flange portion and also having a recessed portion formed on the end face portion and a switch-actuating portion.

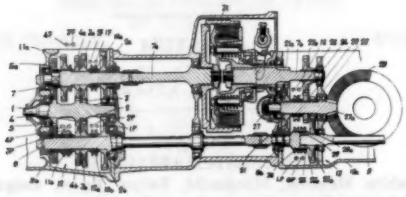
3,733,912
TRANSMISSION FOR FARM TRACTOR

Yoshinobu Murayama; Tadashi Morimoto; Mikio Kinoshita, and Isamu Yamanishi, all of Sakai-shi, Osaka, Japan, assignors to Kubotatekko Kabushikigaisha, Osaka, Japan

Filed May 24, 1971, Ser. No. 146,149
Claims priority, application Japan, May 25, 1970, 45/51690; May 25, 1970, 45/51691
Int. Cl. F16h *37/06, 3/08*
U.S. Cl. 74—15.4 **4 Claims**

A transmission comprising a primary speed change mechanism including a main shaft provided with a plurality of gears for power transmission, an upper counter shaft and a lower counter shaft disposed in parallel on the opposite sides of the main shaft, the upper counter shaft being provided with a group of speed change gears for running the tractor, the lower counter shaft being equipped with a group of speed

change gears for power takeoff. The upper counter shaft is coupled with a secondary speed change mechanism including a bevel pinion shaft which is provided with gears in meshing engagement with gears on the extension of the upper counter shaft and a bevel pinion meshing with a bevel gear. The lower



counter shaft also extends in parallel relation to the upper counter shaft and is coupled with a power takeoff shaft so as to provide live power takeoff independent of the speed of the tractor and ground power takeoff in synchronism with the speed of the tractor.

3,733,913

WINDSHIELD WIPER ASSEMBLY FOR VEHICLES, PARTICULARLY FOR MOTOR VEHICLES

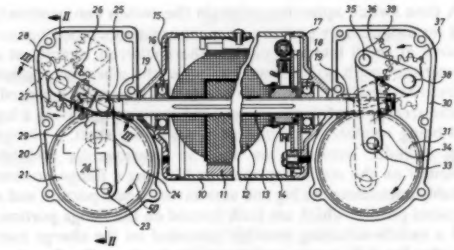
Theodor Schneider, 30 Seestr., 7121 Freudental; Willy Bock, 16 Erwin-Balz Str., and Karl-Friedrich Schubert, 10 Friedrich-Naumann-Str., both of 712 Bietigheim, all of Germany

Filed Aug. 26, 1971, Ser. No. 175,140

Claims priority, application Germany, Oct. 3, 1970, P 20 48 717.6

Int. Cl. F16h *21/40*

U.S. Cl. 74—78 **15 Claims**



A windshield wiper assembly includes a central casing or housing for a rotary electric motor with the rotor mounted around the shaft which extends outwardly and is supported on a roller bearing at each end of the housing. The portion of the shaft which extends outwardly on each end carries a worm which engages with a quadrant gear of an oscillating drive mechanism. The oscillating drive mechanism is contained in the housing at each end of the central casing, the housing also forms a bearing support for the windshield wiper blades and which carries the oscillatable drive mechanism which is connected to the bearing support to oscillate the windshield wipers.

3,733,914

MOTION CONVERSION MEANS

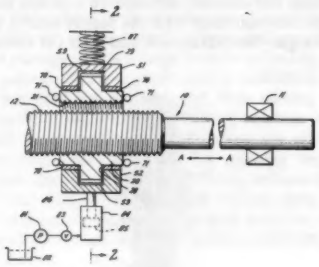
John M. Sheesley, Houston, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed June 1, 1971, Ser. No. 148,603

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **9 Claims**

A device for converting rotary motion of one member into linear motion of a further member. Rotating member, such as a spur gear rotates an intermediate, internally and externally toothed or threaded nut. The internal threads may be caused



to engage or disengage the external threads on a linearly moveable rod member, causing such linear motion thereof.

3,733,915

CONCEALED WINDSHIELD WIPER SYSTEM

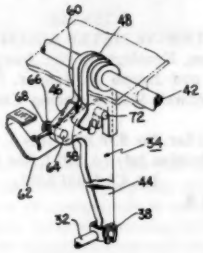
Dionysios D. Papadatos, Kenmore; Raymond A. Deibel, West Falls, and William C. Riester, Williamsville, all of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.

Division of Ser. No. 12,627, Feb. 19, 1970, Pat. No. 3,619,847.

This application July 2, 1971, Ser. No. 159,255

Int. Cl. F16h *21/44*

U.S. Cl. 74—99 **1 Claim**



A motor vehicle includes a transversely extending hinged cowl panel adjacent the lower edge of the windshield for concealing therebelow the windshield wiper arms and blades when parked. The hinged cover or cowl panel is movable from a closed position when the wipers are parked to an open position when the wipers are operating. A fluid pressure windshield wiper motor oscillates the wiper arms and blades through a linkage transmission. The motor includes an auxiliary linearly reciprocating drive shaft for moving the cowl panel to open position when the wiper motor is started before the arms and blades move out of parked position and to closed position when the wiper motor is switched off following movement of the wiper arms and blades to a depressed park position. The linearly reciprocating drive shaft is coupled to the hinged cowl panel through a releasable coupling assembly which can be uncoupled to permit manual movement of the cowl panel to an extreme open detent position for access to the equipment stowed therebelow. The coupling assembly is provided with an intermediate detent position for returning the cowl to a position to permit wiper operation in case of failure of the cowl retracting mechanism.

3,733,916

DEVICE TO SLOW DOWN A MECHANICAL STEP DRIVE

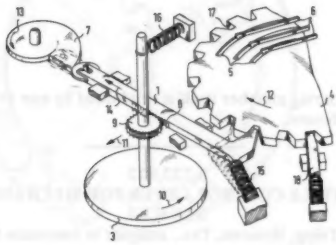
Walter K. Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Postrasse, Switzerland

Filed June 17, 1971, Ser. No. 154,075

Claims priority, application Switzerland, June 17, 1970, 9166/70

Int. Cl. F16h *29/00*

U.S. Cl. 74—125 5 Claims



A device for the slowing down of a mechanical step drive, especially for use in electric automatic cycle operations, wherein the speed of a conveying movement element is decreased by means of a flywheel so that a continued turning of a control element disc is substantially prevented thereby beyond a predetermined conveying step of said element.

3,733,917

PAWL AND RATCHET DEVICE

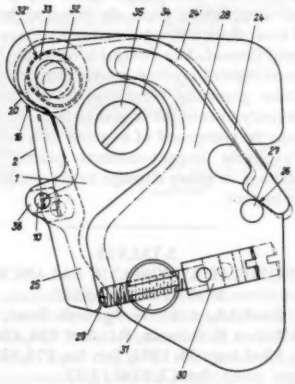
Francois Nikles, 2087 Cornaux, NE, and Rene Besson, Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger SA, Neuchatel, Switzerland

Filed Oct. 19, 1970, Ser. No. 81,665

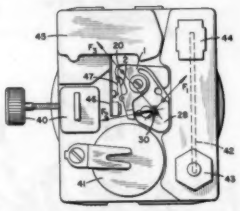
Claims priority, application Switzerland, Oct. 21, 1969, 15739/69

Int. Cl. F16d *7/00*

U.S. Cl. 74—144 4 Claims



The holding pawl of a pawl and ratchet device is independantly adjustable for phase and pressure on a ratchet. A fork-like support carrying the holding pawl can be translationally moved to bring the pawl into engagement with a ratchet. To adjust the phase, the support is then pivoted about the axis of the ratchet by elastic deformation of an arm of the support. Displacement and pivoting of the support is effected by pressure on converging bearing surfaces on the arms of the support. The holding pawl is pivotally friction mounted on the support to enable adjustment of its pressure on the ratchet.



3,733,918

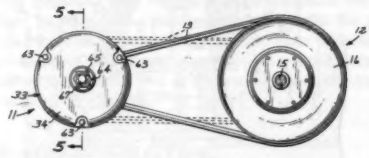
CENTRIFUGAL CLUTCH

Perry M. Domaas, Minneapolis, Minn., assignor to Textron Inc., Providence, R. I.

Continuation-in-part of Ser. No. 82,633, Oct. 21, 1970. This application Mar. 9, 1972, Ser. No. 233,223

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 E 11 Claims



The disclosure is directed to a variable ratio centrifugal clutch having driving and driven assemblies connected by an endless belt. The driving assembly consists of a pair of sheaves affixed to a drive shaft, one being axially stationary and the other being axially movable with respect thereto. The movable sheave forms part of an enclosed housing in which a plurality of flyweights are pivotally mounted. The flyweights operate in conjunction with a stationary member which is also disposed inside the enclosure. Guide members formed integrally with the rotatable enclosure operate in conjunction with guiding portions of the axially stationary member to insure proper relative axial movement therebetween. In response to increases in drive shaft speed, the flyweights swing outward and engage the stationary member to move the housing in its entirety along the shaft to bring the sheaves together.

3,733,919

ADJUSTABLE ECCENTRIC BEARING MOUNTINGS

Herbert E. Rupp, II, Mansfield, Ohio, assignor to Rupp Industries, Inc., Mansfield, Ohio

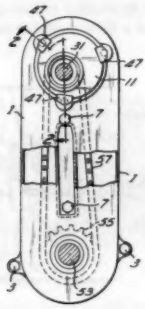
Filed Sept. 20, 1971, Ser. No. 181,724

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.16 5 Claims

A device for laterally shifting one shaft relative to another shaft which includes two separate, axially spaced, eccentric

bearing mountings, means interconnecting those two



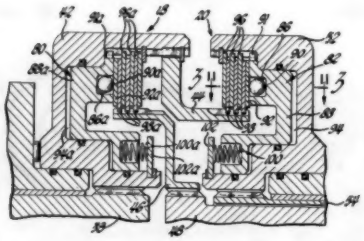
mountings for simultaneous adjusting rotation and means for clamping those mountings in adjusted position.

3,733,920

TRANSMISSION AND HYDRAULIC SOURCE

Robert E. Annis, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 172,109
Int. Cl. F16h 57/10, 47/00
U.S. Cl. 74—763 3 Claims



A transmission having a positive displacement pump for supplying fluid pressure to the transmission control and accessory devices such as power steering. The pump is driven by the input shaft during normal operation when the engine is running. However, when the engine is not running and the vehicle is moving a drive connection between the output shaft and the input shaft is established through self-energizing mechanisms in the transmission input clutches. These self-energizing mechanisms engage one or more input clutches to provide a drive connection between the output shaft and the pump during the engine off coast condition regardless of the transmission drive mode previously selected or the direction of vehicle movement.

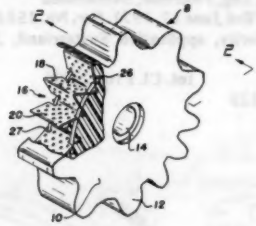
3,733,921

REINFORCED PLASTIC GEAR

William H. Carveth, 11329 79th Avenue, Edmonton, Alberta, Canada

Filed Oct. 15, 1971, Ser. No. 189,517
Int. Cl. F16h 55/12
U.S. Cl. 74—439 5 Claims

A gear formed of plastic by a molding process, and having an annular reinforcing member incorporated within the gear to strengthen the teeth thereof. The reinforcing member is a perforated strip having radial projections which are sized and shaped substantially to conform to the gear teeth. Preferably,



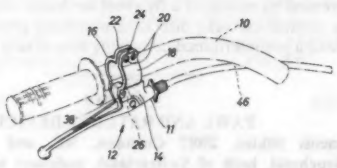
the reinforcing member itself is reinforced by one or more annular stiffeners.

3,733,922

FLEXIBLE CONTROL LEVER FOR MECHANICAL DEVICES

Virgil P. Tripp, Houston, Tex., assignor to Interstate Sports Incorporated, Houston, Tex.

Filed Nov. 11, 1971, Ser. No. 197,728
Int. Cl. G05g 1/04
U.S. Cl. 74--523 13 Claims



A flexible control lever for mechanical devices such as motocycles that facilitate precise and sensitive manual control of the mechanical device and prevent damage to the mechanical device by over-stressing of mechanical parts. The control lever may be adapted for manipulation by the hand or foot of the user during operation of the mechanical device. The control lever may include an integral web that cooperates with the control lever structure to gradually increase the resiliency of the control lever from a pivoted extremity thereof toward the free extremity thereof. The control lever may also be formed to define an elongated tapered groove that presents a control lever structure gradually increasing in resiliency from the pivoted extremity toward the free extremity thereof. The control lever may be composed of any one of a number of commercially available impact-resistant plastic materials to prevent breakage or other damage to the control lever upon receiving an impact.

3,733,923

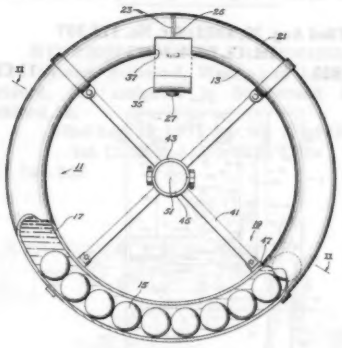
ECONOMICAL AUTOMATIC BALANCER FOR ROTATING MASSES

Eugene A. Goodrich, 4101 Wedgworth Road, Fort Worth, Tex., and Robert H. Johnson, P.O. Box 924, Champaign, Ill.

Filed Aug. 30, 1971, Ser. No. 175,938
Int. Cl. F16f 15/32
U.S. Cl. 74—573 3 Claims

An economical automatic balancer for rotating masses characterized by a circular rigid self-sustaining race formed of a precision bent metallic tube having its ends welded together and having a substantially uniform internal diameter so as to define a smooth raceway for spherical counterweights; a plurality of counterweights and a lubricating and damping fluid movably disposed within the race; and means for rigidly connecting the race with the rotating mass such that the spherical

counterweights will align themselves within the race so as to compensate for dynamic unbalance thereof. The use of the precision bent metallic tube effects an automatic balancer that



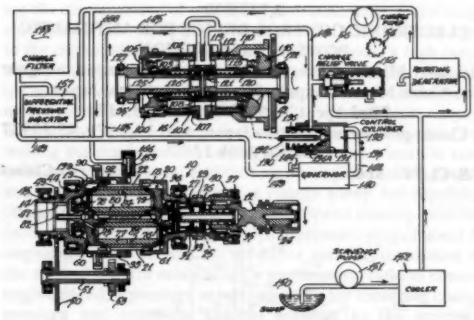
is advantageous over similar prior art balancers, is easily installed in a wide variety of applications, yet is much more economical in its total cost than the prior art balancers.

3,733,924

HYDROMECHANICAL TRANSMISSION

Robert J. Zentz, and Robert A. Stuttler, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 24, 1972, Ser. No. 220,289
Int. Cl. F16h 47/04
U.S. Cl. 74—687 17 Claims



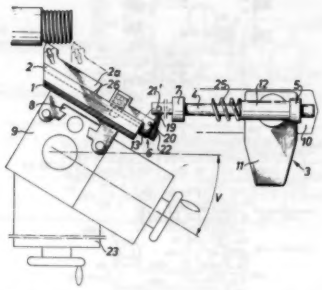
A hydromechanical high speed drive transmission for driving an aircraft alternator at constant speed even though the speed of the engine fluctuates, including a mechanical differential having an input ring gear, an output ring gear, and a carrier with intermeshing pinions respectively engaging the ring gears, a variable hydrostatic transmission driven with the input gear and connected for controlling rotation of the carrier to vary the speed of the output gear relative to the speed of the input gear, releasable detent means for preventing reverse rotation of the carrier on cold starts, a charge pump driven with the output gear for supplying fluid to the hydrostatic transmission, and means responsive to pressure developed by the charge pump for withdrawing the releasable detent means acting on the carrier.

3,733,925

THREAD CUTTING DEVICE FOR SLIDE LATHES

Reinar Schmidt, and Erik Schmidt, both of Skyttegatan 5-7, S-771 01 Ludvika, Sweden

Filed Apr. 29, 1971, Ser. No. 138,573
Claims priority, application Sweden, May 6, 1970, 6237/70
Int. Cl. B23b 21/00
U.S. Cl. 82—24 A 7 Claims



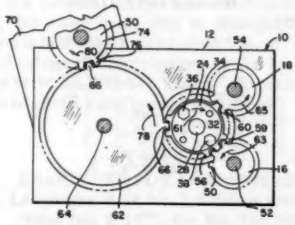
A thread cutting device for a slide lathe comprising a tool holder support member constructed of a guide member and a slide member reciprocatingly slidable with respect to each other and mounted at a pre-determined oblique angle with respect to the axis of rotation of the lathe spindle whereby the members move in a straight line movement at the oblique angle. SPring biased latch means normally lock the guide and slide members against relative movement when the tool is in a work cutting position. Stop means are connected to the support member to release the latch means to permit the guide and slide members to move relative to each other to cause the cutting tool to move out of engagement with a workpiece and stop continued feed of the tool at a position where the cutting operation is to be terminated.

3,733,926

INTERCHANGEABLE DRIVE WITH BALANCING GEARS

Henry F. Hope, 195 Welsh Road, Huntingdon Valley, Pa., and Stephen F. Hope, 2421 Wyandotte Road, Willow Grove, Pa.

Filed June 18, 1971, Ser. No. 153,168
Int. Cl. F16h 57/00
U.S. Cl. 74—410 2 Claims

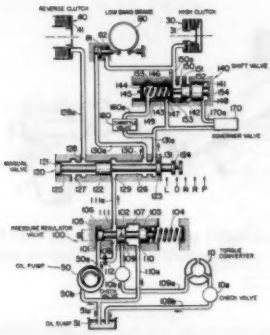


An interchangeable drive with balancing gears in peripheral arrangement about a drive gear to equalize stresses upon the drive gear shaft and bearings when the drive gear meshes with and drives a gear train system.

3,733,927
HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Sumio Uozumi, and Kiyoshi Ohnuma, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of Ser. No. 36,954, May 13, 1970, abandoned. This application Oct. 26, 1971, Ser. No. 192,252
Int. Cl. F16h *57/10, 47/00*; B60k *21/00*
U.S. Cl. 74—753 **10 Claims**

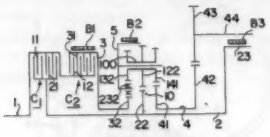


A hydraulic control system, for an automatic transmission having a torque converter or a fluid coupler and a servo-operated speed change gear for use in vehicles, includes a pressure regulator valve regulating a control pressure applied to the servos of the speed change gear, an oil pump driven by an engine crank shaft for supplying the control pressure, and a shunt passage which is opened or blocked off by the pressure regulator valve to recirculate or shut off the flow of pressure oil to the pump according to the vehicle speed. When the vehicle is driven above a predetermined speed, the shunt passage is opened and the pressure oil circulates through an orifice which reduces the discharge oil pressure or the control pressure for the servo units due to an increase in oil flow to assure a smooth gear change in the drive range of the transmission and, when the vehicle is started, or driven at a low speed, the shunt passage is blocked, thereby establishing a high control pressure applied to the servo units, assuring a sure and smooth gear change in low and reverse ranges of the transmission.

3,733,928
SPEED CHANGE GEAR DEVICE

Sumio Uozumi, Toyota, and Koichiro Kirosawa, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushika Kaisha, Aichi-ken, Japan

Filed June 2, 1970, Ser. No. 42,661
Claims priority, application Japan, June 3, 1969, 44/42929
Int. Cl. F16h *57/10*
U.S. Cl. 74—753 **6 Claims**

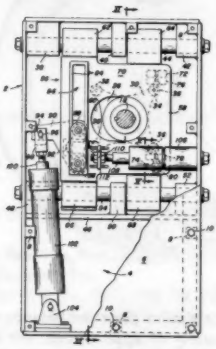


A speed change gear device which comprises a relatively small number of planetary gears and associated parts and which is especially applicable to the transmission mechanism of a smaller-sized automotive vehicle. The speed change gear device employs additional brake means to fix an input member of a planetary gear train to the gear case to furnish a greater speed change ratio or a greater number of speed change steps without increasing the number of gears in the planetary gear train.

3,733,929
INDEXING APPARATUS

James J. Fatula, Perry Township, Lawrence County, Pa., assignor to Ryman Engineering Company, Ellwood City, Pa.

Filed Aug. 20, 1971, Ser. No. 173,397
Int. Cl. B23b *29/32*
U.S. Cl. 74—822 **11 Claims**

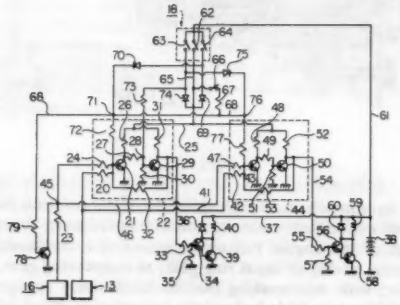


Indexing apparatus includes a housing, a rotatable indexing shaft mounted in the housing, a spider mounted on the shaft for rotation therewith, a plurality of rollers equally spaced about the periphery of the spider, and an indexing bracket mounted in the housing for movement transversely of the shaft. A stop block on the bracket engages one of the rollers to prevent rotation of the spider. A slotted arm on the bracket engages another roller to rotate the spider when the first roller is disengaged from the stop block.

3,733,930
ELECTRONIC CONTROL DEVICE FOR AUTOMATIC POWER TRANSMISSION

Masanori Mizote, Kanagawa-ku, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 12, 1971, Ser. No. 133,117
Claims priority, application Japan, Apr. 19, 1970, 45/32937
Int. Cl. B60k *21/02*
U.S. Cl. 74—866 **7 Claims**



An electronic shift control device for an automatic power transmission causing the level of vehicle speed at which shifting takes place to change in dependence on driving conditions to prevent the engine from overspeeding or to increase the engine output torque for quick acceleration. Sensor sensing vehicle speed throttle valve position, position of a manual

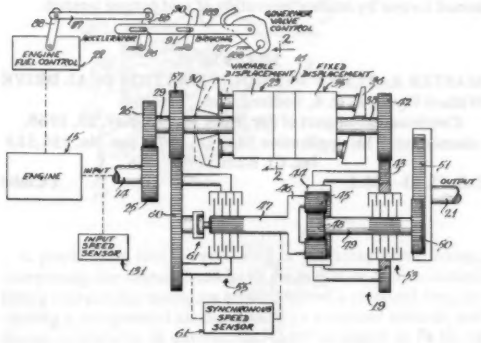
selector lever and a kick-down position of an accelerator pedal generate voltages which are fed into a gear shift control circuit which computes an appropriate gear reduction ratio at all times and generates a corresponding command signal for changing the reduction ratio or shifting over a wide vehicle speed range, whenever necessary.

3,733,931

HYDROMECHANICAL TRANSMISSION

Bengt E. Nyman, Redmond, Wash., and Larry T. Becker, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 16, 1971, Ser. No. 171,925
Int. Cl. B60k *21/00*; F16h *47/04*
U.S. Cl. 74—868 **20 Claims**



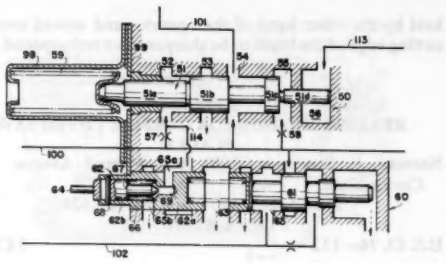
An infinitely variable hydromechanical transmission for a highway truck or the like including a hydraulic pump and motor together with a mechanical differential, means for varying the displacement of one of the hydraulic units, a low range clutch for transmitting power directly from the hydraulic units to the output shaft in a purely hydrostatic mode, a high range clutch engageable synchronously under full load for establishing split power paths in a hydromechanical mode, and control means for actuating the clutches and the displacement varying means. The control system includes a governor valve for controlling the displacement varying means, an acceleration control for simultaneously establishing an engine throttle setting and a governor valve setting, a charge pump for supplying charge fluid under pressure, an engine speed sensing valve for receiving charge fluid and supplying pressure proportional to engine speed to actuate the governor valve in opposition to the manual bias for establishing a transmission ratio to control engine speed, a pressure regulating valve for receiving charge pressure and supplying control pressure to the governor responsive to a pressure signal from the engine speed responsive valve in a manner to establish maximum control pressure at approximately 70 percent of rated engine speed, a drive selector valve for establishing neutral, low range forward, reverse and high range forward, a shift valve for controlling energization of the high range clutch and deenergization of the low range clutch, a shift qualifying valve controlled by the engine speed responsive valve for supplying a signal to the shift valve indicating attainment of predetermined minimum engine speed, a synchronous speed sensitive valve for supplying a shift signal to the shift valve when the speed of the output shaft exceeds the speed of the input shaft, a sequence valve controlled by the shift valve for reversing the displacement varying means when shifting from low range to high range, a reshift delay valve for preventing immediate downshift from high range due to transitory signals, and shunt valve means for connecting opposite sides of the displacement varying means in event of panic stops.

3,733,932

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS

Sumio Uozumi, and Ichio Sakai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed May 5, 1971, Ser. No. 140,327
Claims priority, application Japan, May 9, 1970, 45/39414
Int. Cl. B60k *21/00*; F16h *3/08*
U.S. Cl. 74—869 **8 Claims**



A hydraulic control system for automatic transmissions comprising hydraulic servo means operable to actuate clutch means of the transmission assembly, a pressure oil source for generating pressure oil to be supplied to said hydraulic servo means, a pressure control valve adapted to control pressure oil from said pressure oil source to obtain a required line pressure, a throttle valve for generating a throttle pressure corresponding to the opening of the engine throttle valve, a governor valve generating a governor pressure corresponding to the vehicle speed, a manual valve for distributing the line pressure to a required hydraulic servo circuit to achieve a required transmission condition, a 1 – 2 shift valve for shifting between the first speed and second speed conditions of the transmissions according to the vehicle running conditions regulated by the throttle pressure and governor pressure, a 2 – 3 shift valve for shifting between the second speed and third speed conditions of the transmission according to the vehicle running conditions, accumulator means for moderating the application of the line pressure to a servo oil chamber of the clutch means for the third speed, a 2 – 3 timing valve for determining the timing of up or down shift in the second and third speed conditions of the transmission, and an orifice control valve adapted to control the flow rate of the line pressure supplied to the servo oil chamber in the clutch means for the second speed so as to lessen the shift shock. The throttle valve is so arranged that when the opening of the engine throttle valve is less than 1/4 of the full opening, it functions to drain pressure oil from the pressure oil source by a pilot valve in cooperation with a throttle lever thereby to change the controlling action of the pressure control valve so as to obtain an extremely low constant line pressure from said pressure control valve, this valve being also so arranged that when the transmission is in the third speed condition, the controlling action of said valve is further changed by the line pressure supplied to the servo oil chamber in the clutch means for the third speed so as to obtain a still lower line pressure.

3,733,933

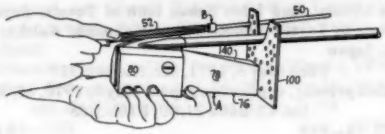
SHARPENER FOR ARROWHEADS

Howard R. Longbrake, R. D. No. 2, Grafton, Ohio

Filed Jan. 8, 1971, Ser. No. 104,940
Int. Cl. B21k *5/12*
U.S. Cl. 76—88 **6 Claims**

An arrow broadhead sharpener to be held in one hand of an operative and comprising clamp members between which one blade of an arrowhead, another blade of which is to be sharpened or resharpened, is secured and a tool guide member extending transversely of the clamp members having apertures

therein in which one end of a sharpening instrument or tool, such as, a file, stone, etc., is received while the other end is



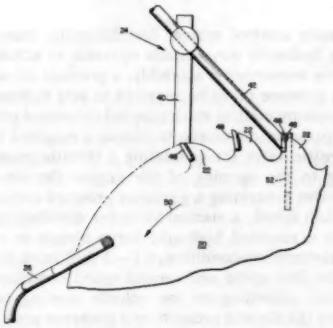
held by the other hand of the operator and moved over the cutting edge of the blade to be sharpened or resharpened.

3,733,934

BRAZING METHOD FOR CARBIDE TIPPED SAW BLADES

Norman A. Stevenson, 1632 East Merced Avenue, West Covina, Calif.

Filed June 7, 1971, Ser. No. 150,626
Int. Cl. B23d *65/00*
U.S. Cl. 76—112 **3 Claims**



A machine for brazing carbide tips onto the cutting teeth of circular saw blades comprising a vertical saw support jig attached to a cabinet enclosing carbon arc brazing apparatus therein. A first electrode is attached to the saw which is urged in a direction so that a carbide tip disposed against a saw tooth is forced into engagement with a second (carbon) electrode. A clearance gauge assures proper lateral placement of the tip against the saw tooth. The carbon arc brazing apparatus includes a variable rheostat calibrated to show differing saw thicknesses, at indices where the brazing area is brought to desired proper temperature related to the indicated saw thickness. A timer thermostat is used in the brazing circuit to prevent excess heat in the brazing area. The method for brazing a carbide tip to a circular saw tooth edge includes placing the saw in a jig, inserting a carbide tip to be brazed between a carbon electrode and the saw tooth, retaining the tip against the tooth by weight of a brazing electrode attached to the saw outside of the brazing area, brazing by moving a silver solder rod about the junction of the tip and saw tooth, and trimming the brazed, tipped saw tooth to a cutting edge.

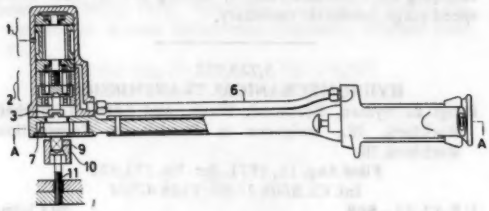
3,733,935

TORQUE WRENCH WITH A NUT RUNNER

Hiroshi Tsuji, Chyofu-shi, Tokyo, Japan, assignor to Tonichi Manufacturing Co., Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,194
Claims priority, application Japan, Oct. 26, 1970, 45/93620
Int. Cl. B25b , *13/00*
U.S. Cl. 81—52.4 **1 Claim**

Torque wrench, characterized in provision of system for rotating a screw-fastening ratchet driven by power source in combination with manually operative ratchet type torque wrench, said ratchet is driven at high speed in the movement of rotation by low torque exerted from said power source to be



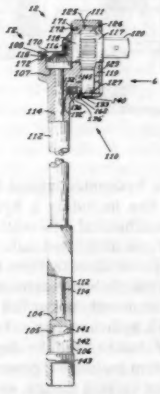
effective enough for settling screw, subsequent thereto the settled screw is adapted to be fastened securely at a predetermined torque by manual operation of said torque wrench.

3,733,936

MASTER RATCHET WITH QUICK ACTION DUAL DRIVE

Wilford Flynn, R. R. 6, Bedford, Ind.

Continuation-in-part of Ser. No. 778,723, Nov. 25, 1968, abandoned. This application June 18, 1971, Ser. No. 154,513
Int. Cl. B25b *13/00*
U.S. Cl. 81—58.1 **1 Claim**



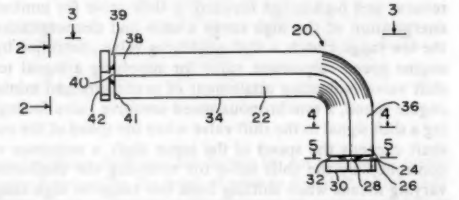
A wrench having both a ratchet drive and a higher speed gear drive in which changes from ratchet to gear drive and vice versa can be quickly and easily affected.

3,733,937

NON-SLIPPING POLYGONAL WRENCH

Frank G. J. Mezey, 115 Monroe Drive, Centerport, N.Y.

Filed June 28, 1971, Ser. No. 157,327
Int. Cl. B25b *13/48*
U.S. Cl. 81—71 **10 Claims**



A wrench having a plurality of sides is formed with a head at one end for insertion into a socket of a screw or bolt having a

corresponding number of sides. A horizontally springy neck of the wrench is integral with a head and with a tip spaced axially from the head. The tip is offset circumferentially from the head approximately 5° to 10°. A similar head, springy neck and offset tip may be provided at the other end of the wrench. The wrench may be straight or L-shaped and have any number of sides greater than two.

3,733,938

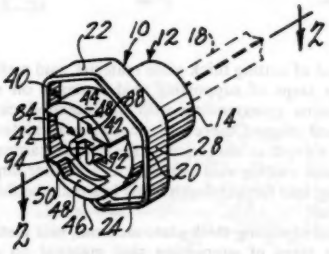
PLURAL BUNG TOOL

Bernard L. Smith, P. O. Box 10504, Atlanta, Ga.

Filed Mar. 8, 1972, Ser. No. 232,746

Int. Cl. B25b *13/02*

U.S. Cl. 81—119 **10 Claims**



A plural bung tool for removing or replacing barrel bungs, comprising one unitary head having a socket or other standard fitting thereon for mounting on the shaft of a standard tool, including a compressed air driven tool or a manual wrench, and having a plurality of cavities and faces arranged to fit six or more existing bungs. The head includes a sleeve-like body near one end of which is mounted a hexagonal cavity collar for fitting the hexagonal bungs and within said hexagonal collar extending and protruding therefrom a second sleeve defining opposed jaws recessed to fit a smaller square or rectangular recessed bung fitting. The main body includes a passageway which is rectangular or square but not circular so that a spring biased bifurcated jaw travels therein to be pushed out of the way when fitting the plural tool second jaw collar to a bung. The bifurcated, sliding jaw arrangement is insertable inside the type of small bung fitting which has a cavity with opposed protrusions thereon and said second bifurcated jaw will also insert between projecting, parallel plates in another type of bung fitting. The second opposed jaw arrangement will fit over certain hexagonal bungs and some square or rectangular bungs. Thus, the single tool head fits any one of six or more existing bungs simply by inserting same thereon or thereinto as the case may be without further manipulative work.

ERRATUM

For Class 82—24 A see:
Patent No. 3,733,925

3,733,939

APPARATUS FOR FORMING PRECISION SURFACES ON ENDS OF LARGE PIPES AND LIKE WORK PLACES

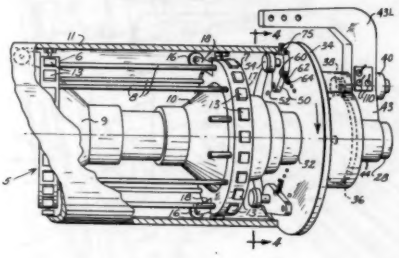
Joseph R. Paysinger, Ahwaz, Iran; Eugene F. Sims, and Jerome W. Nelson, both of Houston, Tex., assignors to CRC-Crose International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 743,566, July 9, 1968, Pat. No. 3,608,406. This application Oct. 14, 1970, Ser. No. 80,717

Int. Cl. B23b *5/16*

U.S. Cl. 82—4 C **5 Claims**

A machine and method for precision cutting or machining of annular ends of pipe in the field, e.g., for preparation of large pipe ends for welding girth joints, comprises a cage shaped double ended aligning clamp which axially aligns and firmly supports a rotatable face plate. This plate carries multiple cutting tools and guide rollers, precision mounted on spring-biased pivoted arms which permit radially inward and outward motion of the tools and rollers with respect to the pipe end, to accommodate minor eccentricities in the work. The face plate is power driven around the axis of the clamp to carry out the machining operation. Each pivoted arm carries a cutter or equivalent tool, closely coupled with a precision guide roller which is also chamfered to slide into the pipe as



the supporting arm pivots radially inward against the force of strong spring backing means. Each arm is pivoted to the plate radially inside the tool to produce a couple or moment of force, thus augmenting the spring means to hold guide roller and tool radially outward against the work. Cutters may be alike or complementary to each other. Use of plural tools distributes strain and facilitates high precision operations with minimum driving force and low distortion of the work and mechanism.

3,733,940

LATHES

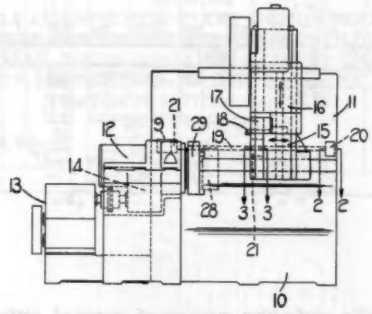
Julius Harman, Baginton, and Michael Eric Norman, Holly Croft, both of England, assignors to Alfred Herbert Limited, Coventry, England

Filed Apr. 8, 1971, Ser. No. 132,529

Claims priority, application Great Britain, Apr. 10, 1970, 17,117/70

Int. Cl. B23b *21/00*

U.S. Cl. 82—21 R **20 Claims**

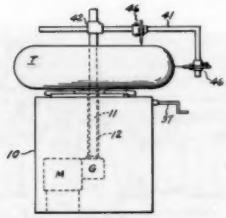


A lathe is provided in the feed drive to its saddle with a yieldable joint which absorbs shock loads. The joint may be incorporated in a nut assembly which is displaceable along a leadscrew and is connected to the saddle. The nut assembly comprises a housing, a pair of separate nut portions in the housing and prestressed resilient devices holding in position a pair of abutments through which axial thrust is transmitted from the nut portions to the housings.

3,733,941
APPARATUS FOR CUTTING USED PNEUMATIC TIRE CASING

William J. Geyer, Jr., 172 Main St., Hellertown, Pa.

Filed Jan. 3, 1972, Ser. No. 214,856
Int. Cl. B23b 5/14
U.S. Cl. 82—59 8 Claims

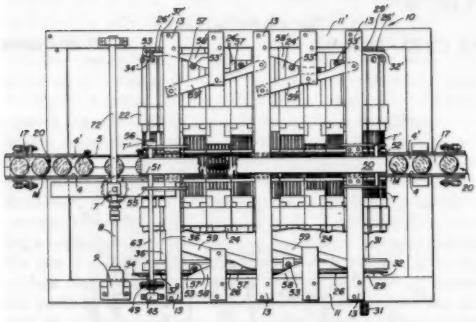


A used pneumatic tire casing is fixedly supported from within and about a rotatable shaft. A cutter drive bar is attached to and rotates with the shaft. Cutters are attached to the cutter drive bar. With the tire casing so supported and the cutters moved to pierce the tire casing, the shaft is rotated. The cutter drive bar and cutters rotate with the shaft, sweep through 360° and cut the tire casing into a number of circular portions.

3,733,942
MUFFIN PERFORATING MACHINE

Eugene M. Noel, 42 Kingston Road, Newton Highlands, Mass.

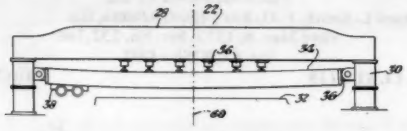
Filed Nov. 9, 1970, Ser. No. 87,893
Int. Cl. B26d 3/08
U.S. Cl. 83—2 4 Claims



A muffin perforating machine of increased perforating capability having a muffin conveyor, a first muffin rotating or turning device for positioning the muffin carried by the conveyor for a first perforating operation, and a second perforating operation at a different part of the muffin rim, in which operations the tines penetrate slightly more than halfway through the muffin thereby providing a finished perforated product more suitable for marketing because it can be easily split manually from any direction by the ultimate consumer in preparation for toasting at the time of consumption.

3,733,943
CUTTING METHODS

John J. Sutyak, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 747,219, July 24, 1968, Pat. No. 3,657,953. This application Sept. 9, 1971, Ser. No. 179,041
Int. Cl. B23d 19/02
U.S. Cl. 83—7 17 Claims

A method of cutting thick plate material, said method comprising the steps of supporting said material on elongated cutting means co-extending with an intended cut in said material and aligned therewith, scoring said material along said cut to a depth at least equal to the surface hardness of said material, and cutting said material to a further depth along said scoring, said further depth being less than the thickness of said material.

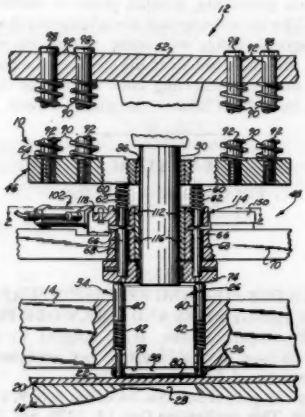
A method of slitting thick plate material, said method comprising the steps of supporting said material on a pair of generally parallel knife edges co-extending with an intended cut and aligned therewith, scoring said material along each of said knife edges respectively, and slitting said material along each of said knife edges so as to coincide with said scoring.

Also disclosed is a method for countering diminishment of cutting forces from bowing of certain components of the cutting apparatus.

3,733,944
SELECTIVE STRIPPER MECHANISM

Eugene Lewis Dietrick, Norristown, and Joseph Anthony Linkus, Levittown, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 12, 1971, Ser. No. 188,393
Int. Cl. B26d 5/12, 7/02, 7/18
U.S. Cl. 83—62 18 Claims



An improved punch press includes a selectively operable stripper unit which presses a workpiece against a lower turret as a tool is retracted away from the workpiece by a ram. A transfer device transmits actuating forces to the stripper unit during an operating cycle of the punch press. To enable the

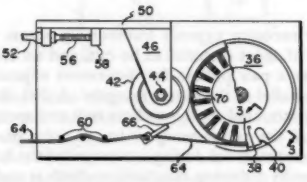
stripper unit to be selectively operated, the transfer device is operable between an active condition in which it is effective to transmit actuating forces to the stripper unit and an inactive condition in which the transfer device is ineffective to transmit actuating forces. A control apparatus initiates a punching operation only after the transfer device has been operated to either the active or inactive condition.

3,733,945

METHOD AND APPARATUS FOR CUTTING AND REMOVING ELONGATED MATERIAL

Charles Wayne Cook, Salisbury, Rowan, N.C., assignor to Fiber Industries Inc., Charlotte, N.C.

Filed June 3, 1971, Ser. No. 149,682
Int. Cl. B65h *51/16*
U.S. Cl. 83—24 **7 Claims**



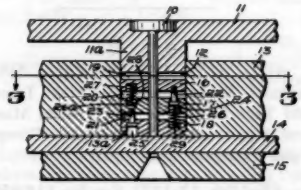
A method and apparatus is disclosed and claimed for cutting and removing elongated material by means of a plurality of knife edges and an overhead air jet. The cutting is achieved by applying a pressure to the inner layer of continuous filament forcing it against the knife edges and thereby cutting the filament wherein the air jet impinges downwardly upon the cut filament and causes it to be removed.

3,733,946

SUPPORT ASSEMBLY FOR PUNCHES AND PISTON RODS

Richard P. Davis, Sanbornton, N.H.

Filed Feb. 16, 1971, Ser. No. 115,409
Int. Cl. B26f *1/40*
U.S. Cl. 83—129 **10 Claims**



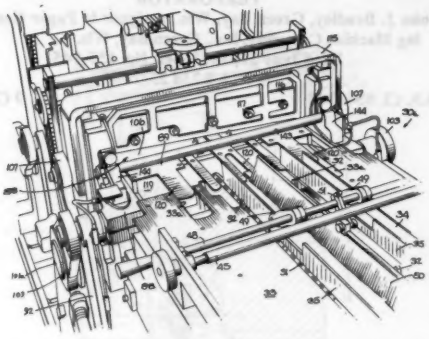
A support assembly for punches or piston rods of small diameter relative to their required travel. A number of spaced rings or plates are mounted around the punch or rod, and laterally restrained, for example, by the stripper plate of a punching die. The spacing of the rings or plates is controlled and is less than the unsupported length relative to its diameter which the punch or rod will withstand without buckling. On the downstroke of the press, or working stroke of the piston, the rings or plates move together to allow the necessary travel, the sum of the lengths of the initial gaps between the rings or plates being at least equal to the required travel of the punch or rod.

3,733,947

BOOK TRIMMING MACHINE

Robert A. Bryson, Easton, Pa.; Thomas C. Kennicott, Janesville, Wis., and Ernest J. Sarring, Fort Thomas, Ky., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Division of Ser. No. 737,969, June 18, 1968, Pat. No. 3,552,246. This application Aug. 25, 1970, Ser. No. 66,848
Int. Cl. B65h *5/00*
U.S. Cl. 83—280 **7 Claims**



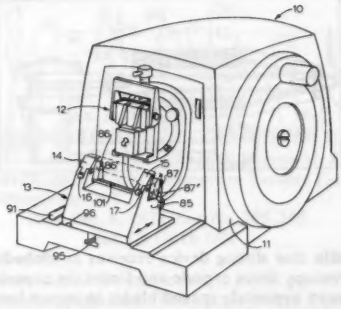
The disclosure relates to a machine for performing trimming operations upon the front and side edges of a book as the book continues to advance through the machine. The machine includes a front edge trimming table which is reciprocated in a horizontal direction and receives a book from an infeed conveyor as the table moves in the direction of the conveyor. As the table continues to move in the direction of the infeed conveyor, the book is clamped to the table and the front edge of the book is trimmed. The machine further includes a side edge trimming table which is reciprocated in synchronism but substantially out of phase with the front edge trimming table. As the front edge table completes its motion in the direction of the infeed conveyor and as the side edge table is about to move in the same direction, the book having its front edge trimmed is advanced onto the side edge table. As the side edge table continues to move in the direction of the infeed conveyor, the book is clamped to the side edge table and the side edges of the book are trimmed. Toward the end of the forward motion of the side edge table, the book is released to a conveyor which advances it from the machine.

3,733,948

SELF ALIGNING BASE CLAMP AND HOLDER FOR DISPOSABLE BLADE AND WATER BATH FOR MICROTOMES AND METHOD

John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C.

Filed June 16, 1971, Ser. No. 153,781
Int. Cl. B26d *4/00*
U.S. Cl. 83—98 **3 Claims**



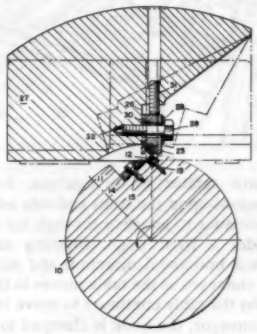
A thin, flexible and disposable blade for microtome cutting has a microtome quality cutting edge and is held by an im-

proved base clamp and blade holder structure which is adapted to flex, clamp and tension the disposable blade without vertical or tilt adjustment. A water trough may be secured to the blade holder to receive and float cut specimens directly from the blade. A method to perform corresponding steps is also disclosed.

3,733,949
NOISE REDUCTION STRIP FOR SHEAR CUT PERFORATOR

John J. Bradley, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.

Filed June 21, 1971, Ser. No. 155,145
Int. Cl. B23d *25/12*
U.S. Cl. 83—348 9 Claims

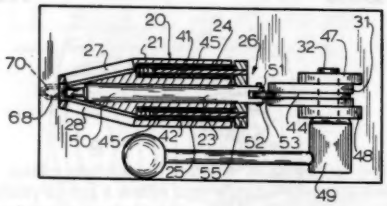


A shear cut perforator having an axially recessed bedroll equipped with resilient roll blades for engagement with and flexing by an anvil blade is provided with a resilient, compressible pad behind the flexing portion of the roll blade to reduce the noise level of the perforator.

3,733,950
APPARATUS FOR SLITTING AN ELECTRON MICROSCOPY TISSUE EMBEDDING CAPSULE CASING

Thomas D. Kinney, 3130 Devon Road, Durham, N.C., and John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C.

Filed Mar. 6, 1972, Ser. No. 231,972
Int. Cl. B26d *7/06*
U.S. Cl. 83—425.3 2 Claims

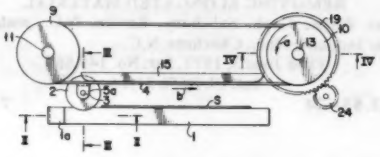


A capsule case slitting device receives an embedded electron microscopy tissue capsule and forces the capsule with its case between oppositely spaced blades to impart longitudinal slits in the capsule case thereby enabling the embedded tissue specimen to be easily separated from its casing.

3,733,951
SHEET CUTTING APPARATUS

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Apr. 27, 1971, Ser. No. 137,808
Claims priority, application Japan, Apr. 30, 1970, 45/37002
Int. Cl. B23d *19/00*; B26d *5/08*
U.S. Cl. 83—484 10 Claims



A cutter receptor extends transversely across the path of movement of sheet material to be cut, and an endless belt is trained over a pair pulleys for movement adjacent and substantially parallel to the cutter receptor. A disk-shaped cutter is rotatably mounted on the endless belt and spring biased to press toward the cutter receptor to cut cut a predetermined length of sheet material during movement of the belt. One pulley is driven by a driving mechanism which is under the control of a control mechanism selectively operable to activate the drive mechanism to rotate the pulley to advance the cutter from a retracted starting position into rotating engagement with the cutter receptor and therealong to cut a length of sheet material, after which the rotation of the pulley is continued to return the cutter to its retracted starting position. In one embodiment of the invention, the driven pulley is fixed to a shaft on which there is rotatably mounted a gear. A coil spring has one end secured to the shaft and its other end secured to a housing rotatable with the gear, and a driving pinion meshes with the gear. The driven pulley is normally latched against movement but, when the latch is released, the spring rotates the driven pulley to drive the belt carrying the cutter. During the time that the pulley is latched against movement, the pinion rotates the gear to rewind the spring. Control elements are associated with the shaft and with the gear, and effect operation of a microswitch controlling energization of a motor for driving the pinion. In another embodiment of the invention, the driven pulley is rotated by an electric motor whose energization is controlled by control cams operatively associated with control switches.

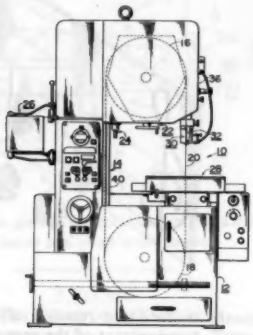
3,733,952
AUTOMATIC CONTOUR MACHINE

Goro Fukugami, Sagamihara-shi; Chiaki Tamura, Ono-shi; Masayuki Taguchi, Tokyo, and Kenichi Maekawa, Kasai-shi, all of Japan, assignors to Amada Company Limited, Isehara-shi, Kanagawa-ken, Japan

Filed Feb. 12, 1971, Ser. No. 114,950
Claims priority, application Japan, Feb. 18, 1970, 45/13467; June 17, 1970, 45/51849; June 17, 1970, 45/51884; June 23, 1970, 45/54060; July 22, 1970, 45/63527; Oct. 22, 1970, 45/104299; Dec. 3, 1970, 45/106337
Int. Cl. B23d *53/06*, *53/08*; B27b *13/04*
U.S. Cl. 83—789 10 Claims

Contour machine in which a worktable is fixed, and enclosed wheels are provided for mounting a band saw, the machine being pivotable with respect to a base, and in which a rotary table, mounted on the worktable, may be automatically set into rotation in the forward or reverse direction or stopped through a curve-sensing guide mechanism. The machine body is pivotable with respect to the base in a plane perpendicular to the face of the band saw, together with upper and lower

housings which lodge wheels for guiding the band saw. The machine has means to provide an adjustable and reproducible relationship of the body with respect to the base, as well as means for immobilizing the pivoted machine body in various positions. In addition, with a view to attaining savings in man-

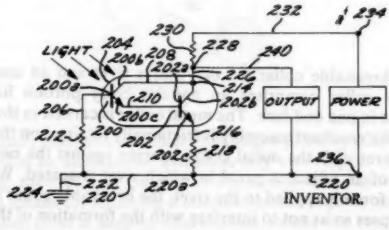


power and automation of operation, units are provided for indication of the saw tension, for bringing a saw-container housing to a saw-mounting position, for clamping the saw, for adjusting the relative distance between a workpiece and a saw-blade guide mechanism, and a unit for stopping the saw movement upon completion of the machining operation.

ERRATUM

For Class 83—474 see:
Patent No. 3,734,150

3,733,953
STRINGED MUSICAL INSTRUMENT WITH OPTOELECTRONIC PICKUP SOUND AMPLIFIER
Dennis A. Ferber, 11322 Donovan Road, Los Alamitos, Calif.
Filed Dec. 30, 1971, Ser. No. 213,935
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.16 **7 Claims**



A stringed instrument, such as an acoustical guitar, is provided with a compact, battery powered sound amplification unit attached thereto in an arrangement including cooperating optoelectronic devices situated adjacent the instrument's strings. Each string intersects with a path of a light beam sent from a first light-emitting device toward a second light-detecting device so that vibration of a string modulates the intensity of light from the first device impinging on the second device to produce an electronic signal corresponding to the musical tone associated with any particular string vibration rate.

The unit can be affixed to an acoustical guitar and utilized to drive a speaker or equivalent acoustic transducer situated within the sound box of the guitar so as to cause the transducer to produce amplified musical tones corresponding to the musical notes played on the strings of the guitar. The source of electric power for operating this device shall be situated on or within the guitar to provide a self-contained device that is not dependent on a source of domestic electric power.

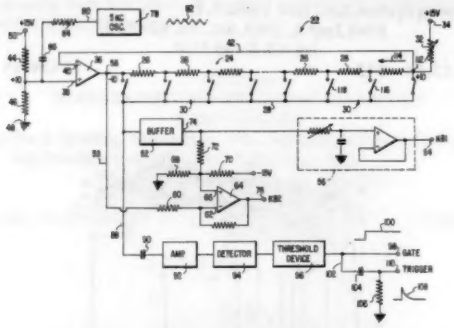
3,733,954
PEDAL GUITAR WITH SELECTIVE STRING CONTROLLING ARRANGEMENT
Grover G. Fields, Stanton, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed June 2, 1969, Ser. No. 829,560
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 **11 Claims**

This invention provides an electric steel pedal guitar having two sets of horizontal strings, which at one end are extended downwardly over the end of the body of the instrument, engaging slides which are adjusted in position in vertical slots by means of threaded elements for thereby tuning the strings. The string tension is adjustable during playing of the instrument by a mechanism that includes pedals which, through rods, rotate bell cranks which pull on additional rods and levers to linearly move operating members having outward projections on the opposite sides of their end portions. These outward projections are engageable with the ends of two sets of levers which, in turn, pull triangular plates which, through rods, move bars carrying adjustable screws for engaging either of two levers mounted at the end of the instrument and supporting the ends of the strings. Inward movement of the bars when engagement is made with one lever of the set will cause the string tension to increase, while engagement with the other lever of the set will relax the string tension. A shifting mechanism actuated by an additional lever causes the support for the operating member to be pivoted, causing it to disconnect the levers used in moving the triangular plates for either set of strings, depending upon the direction of rotation of the shift lever, so that only one set of strings will be adjusted in tension during the playing of the instrument. A switching mechanism disconnects the pickup for the strings disconnected from the tension-adjusting mechanism.

3,733,955
MUSIC SYNTHESIZER KEYBOARD CIRCUIT
Frederick G. Reinagel, Tonawanda, and Eugene M. Zumchak, Williamsville, both of N.Y., assignors to Venture Technology, Inc., Williamsville, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,245
Int. Cl. G01h *1/00*
U.S. Cl. 84—1.01 **20 Claims**

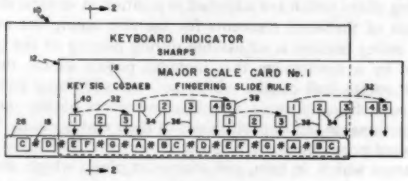
A keyboard circuit for an electronic music generator, such as an electronic synthesizer. The circuit makes it possible to independently control the frequencies of two voltage controlled oscillators at the same time with a single resistance

string by sensing a change in potential across the entire string when a second key is depressed and summing this potential



with the first note potential. Gate and trigger signals are provided for the two notes, one being generated by an AC signal superimposed on the string.

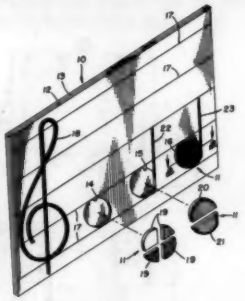
3,733,956
SCALE FINGERING SLIDERULE
Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.
Filed Aug. 13, 1971, Ser. No. 171,562
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **2 Claims**



A scale fingering sliderule for showing the proper sequential fingering of the keys in various scales on a keyboard, the slide holder or body of the item being essentially an elongated panel, the lower edge of which fits behind the keys on the keyboard and is thereby supported in vertical position. The holder has chromatic scale indicia adjacent the lower edge portion to identify all the keys in the adjacent part of the keyboard, while a slider, as one of a set of sliders, on said panel, identifies the tones of at least one scale with the scale intervals and the proper fingering in ascending or descending scale progression. A plurality of sliders, for different scale progressions, are supported in channels provided on both sides of the holder, only one at a time being exposed on the front side of the holder in properly adjusted position relative to the aforementioned chromatic scale indicia on the holder to indicate the keys to be struck and the fingering sequence numerically.

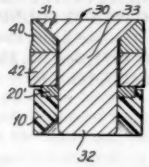
3,733,957
MUSIC TEACHING DEVICE
Mary Anne Peirano, and John F. Peirano, both of 1109 St. Agnes Avenue, Columbus, Ohio
Filed July 10, 1972, Ser. No. 270,091
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **6 Claims**

A teaching device for music is provided having a flat baseboard formed with a plurality of recesses and a like number of music symbol devices that are each removably insertible into a respective recess. The recess in the baseboard and the devices are configured so that each device will only cooperatively interfit with a respective recess. The recesses are of a predetermined depth with the devices being of a thickness as to project a distance outwardly from the surface



of the baseboard to facilitate removal after insertion in a respective recess. Arrangement of the recesses or configuration thereof and the devices form a musical notation system to aid in the teaching process.

3,733,958
COLLAR ASSEMBLY FOR USE WITH A RIVET
Glenn R. Willey, Santa Ana, Calif., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Dec. 10, 1969, Ser. No. 883,755
Int. Cl. F16b *19/04*
U.S. Cl. 85—37 **10 Claims**

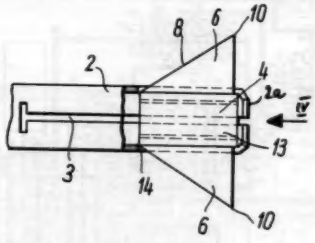


A breakable collar for use with a rivet and an associated metal collar comprises an annular body portion having a recess in one end face. The metal collar is carried in the recess and the resultant assembly is frictionally retained on the tail of the rivet with the metal collar bearing against the outer surface of an adjacent panel in which rivet is seated. When an axial force is applied to the rivet, the breakable collar splits or collapses so as not to interfere with the formation of the upset tail.

3,733,959
EXPANSION ANCHOR
Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed July 30, 1971, Ser. No. 167,748
Claims priority, application Germany, Aug. 8, 1970, P 20 39 559.9; Sept. 3, 1970, P 20 43 620.8
Int. Cl. F16b *13/06*
U.S. Cl. 85—75 **9 Claims**

An expansion anchor for use in a hole formed in a support of porous material. The anchor has a sleeve provided with two or more slots extending rearwardly from its front end, and an expander member for expanding the sleeve located entirely or in part in the latter and provided with at least two flat substantially triangular wings projecting radially outwardly beyond the circumference of the sleeve by a multiple of the diameter

of the latter in combination with twice the wall thickness of the sleeve. Outer edge faces of these wings diverge outwardly



from the axis of the sleeve in direction axially away from the trailing end of the sleeve and at an acute angle.

3,733,960

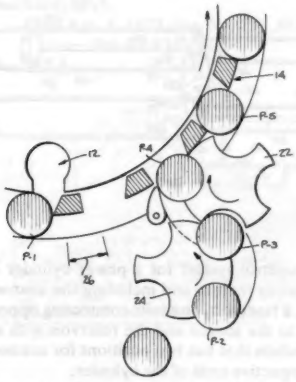
ARTICLE HANDLING SYSTEM

Eugene Ashley, Burlington; Francis L. Jarvis, Troy; Burton P. Clark, Shelburne; George E. Kontis, Essex Junction, and Paul A. Spoor, Jericho, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Nov. 23, 1971, Ser. No. 201,357

Int. Cl. F41d *9/00, 11/14*

U.S. Cl. 89—33 MC **9 Claims**



A battery gun has a stationary housing; a plurality of barrels disposed in an annular row and stationary with respect to said housing; each of said barrels having a respective chamber; feeding means for receiving a continuous and regular train of projectiles from a supply; intermediate means for receiving the train from said feeding means; and distributor means for receiving the train from said intermediate means for providing projectiles to said chambers; said intermediate means including means for sensing the presence of misfired projectiles in said chambers and for providing lacunae in the train of projectiles corresponding to such misfires, whereby no projectiles are provided to said distributor means for provision to chambers containing misfired projectiles.

3,733,961

CONTROL FOR MILLING MACHINES AND THE LIKE

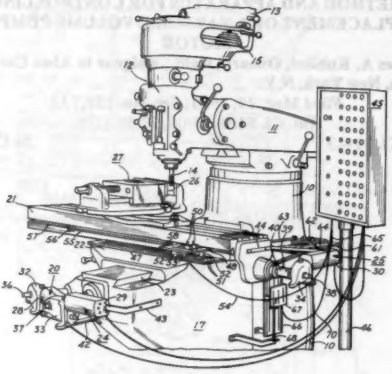
William B. Reynolds, Albuquerque, N. Mex., assignor to Automation Systems, Incorporated, Albuquerque, N. Mex.

Filed Aug. 24, 1970, Ser. No. 66,195

Int. Cl. B23c *9/00*

U.S. Cl. 90—21 R **15 Claims**

An automatic control system for application to conventional machine tools utilizes readily adjustable limit switches and guide assemblies for the switches for attachment to the machine and utilizing a flexible rod for facilitating operation without precision mounting. The circuitry is mounted in a portable control panel or console and each of the limit switches may be plugged interchangeably into any of a plurality of sequence circuits. The speed and direction of motors ac-



tuating the feed screws of the machine are controlled by individual selectors for each sequence circuit. Toggle switches, one for each sequence circuit, are provided to select optional activities within the circuit. Rotary vernier limit switches are provided for connection as the limit switch in any one of a series of selected successive operations of the sequence circuits to obtain precise stop points in the operation of the machine.

3,733,962

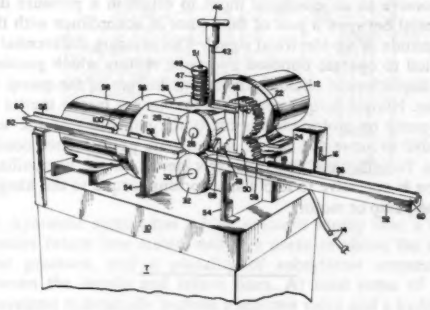
SHEET METAL DEBURRING APPARATUS

Tage G. Persson, Bloomfield, N.J., assignor to Falls Metal Works, Inc., Little Falls, N.J.

Continuation of Ser. No. 7,787, Feb. 2, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 200,948

Int. Cl. B23d *1/26*

U.S. Cl. 90—24 F **5 Claims**



The present invention provides sheet metal deburring apparatus for removing burrs from the edge of a workpiece. The apparatus includes a base member which defines a path of travel for the workpiece, a pair of vertically aligned rollers for moving the workpiece along the path, and a cutting tool for removing burrs from the workpiece as it is moved along the path. The apparatus is particularly characterized by the fact that the cutting tool is positioned so that its cutting edge is disposed between the axes of the rollers in a vertical plane containing the axes of the rollers and within the path so that the cutting edge engages the workpieces at a point substan-

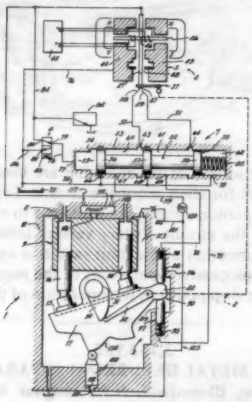
tially adjacent to the engagement of the workpieces by the rollers. The result of the positioning of the cutting tool in such a manner is that the workpiece is firmly gripped during deburring resulting in less chatter and a greatly improved and more efficient deburring apparatus.

3,733,963

METHOD AND APPARATUS FOR CONTROLLING DISPLACEMENT OF A VARIABLE VOLUME PUMP OR MOTOR

Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,733
Int. Cl. F15b *13/02*; F04b *1/26*
U.S. Cl. 91—3 **36 Claims**



The displacement of a servoactuator, such as a variable volume piston pump or motor, is controlled by a servovalve of the jet discharge type having a movable jet tube which is responsive to an electrical input to establish a pressure differential between a pair of fluid lines in accordance with the magnitude of an electrical signal. The pressure differential is applied to operate opposed hydraulic motors which position the displacement changing means or hanger of the pump or motor. Hanger torque applied to the hanger by the inertia of the pump or motor pistons limits the capability of the servovalve to move the hanger under some performance conditions. To offset and neutralize this inertia torque, an auxiliary piston is operative to apply an opposing torque to the hanger of the pump or motor.

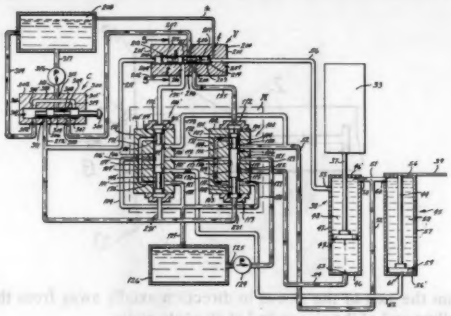
3,733,964

FLUID CONTROL SYSTEM

Ronald K. Schantz, Morton, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Aug. 25, 1971, Ser. No. 174,595
Int. Cl. F15b *11/16, 13/09*
U.S. Cl. 91—412 **6 Claims**

A fluid control system for an elevating scraper incorporating a master control valve for selectively directing fluid to a floor gate cylinder and an ejector gate cylinder, and a pilot sequence valve for sequentially operating said master control valve to assure that fluid will be initially directed to the floor gate cylinder and then subsequently to the ejector gate cylinder; there being a fluid line connecting the floor gate



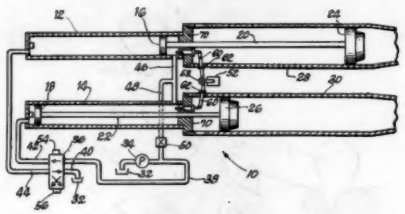
cylinder and the pilot sequence valve for passage of fluid to the latter after the floor gate has been fully extended.

3,733,965

CONTROL SYSTEM FOR FLUID CYLINDER

Bernard G. Braun, Waterford, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed June 7, 1971, Ser. No. 150,458
Int. Cl. F01l *25/08*; F15b *13/09*
U.S. Cl. 91—275 **5 Claims**



A hydraulic control system for a power cylinder having a piston reciprocating therein and including the source of fluid under pressure, a reservoir, conduits connecting opposite ends of the cylinder to the source and the reservoir with a control valve in the conduits that has two positions for connecting the source to the respective ends of the cylinder.

The control system incorporates a switch cooperating with the valve and actuated by an actuator rod located in one end of the cylinder. The actuator rod is slidable in an opening in the end of the cylinder and has an end disposed in the path of the piston. A chamber is defined between the actuating rod and the opening and is placed in communication with the interior of the cylinder. The actuator rod has a first surface in the chamber that is opposed to the end surface of the rod with the first surface having a greater area than the area of the end surface so that the actuator rod is automatically maintained in a first position by the pressure of fluid in the cylinder and is moved to a second position when the piston approaches the end of the cylinder to actuate the switch and reverse the position of the valve.

3,733,966

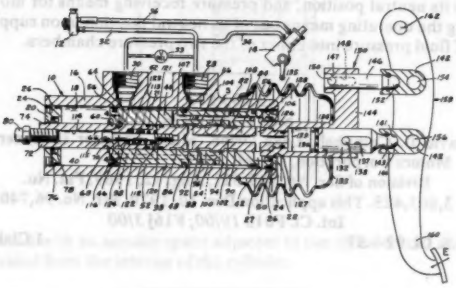
HYDRAULIC POWER BRAKE BOOSTER

Arthur King Brown, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 24, 1971, Ser. No. 127,684
Int. Cl. F15b *13/16, 13/10, 15/17*
U.S. Cl. 91—372 **9 Claims**

A hydraulic power brake booster which utilizes open center valve means positioned concentrically of the booster piston in

a manner to provide follow up action therebetween. The valve is equipped with a trim adjustment for regulating flow between the ports and to the respective ends of the booster piston. Operator-operated means including lever means is interconnected between the valve means and booster piston means to establish one ratio of lever to piston movement for power actuation and a different, higher ratio, of lever to piston movement for no-power.

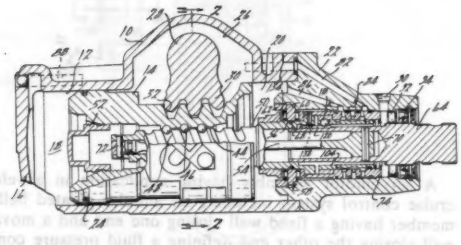


3,733,967

POWER STEERING MECHANISM FOR AUTOMOTIVE VEHICLES

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1971, Ser. No. 131,307
Int. Cl. F15b *9/10*
U.S. Cl. 91—375 A **7 Claims**



A valve mechanism for use with a concentric power steering gear for an automotive vehicle comprising a torque input shaft and a steering worm connected to the input shaft through a torsion bar that permits relative angular displacement of the input shaft with respect to the worm, a valve spool and a registering valve sleeve controlling pressure distribution to pressure movable portions of the steering gear when torque is applied to the input shaft and a mechanical connection between the sleeve and the worm which is adapted to accommodate for misalignment of the input shaft with respect to the axis of the worm.

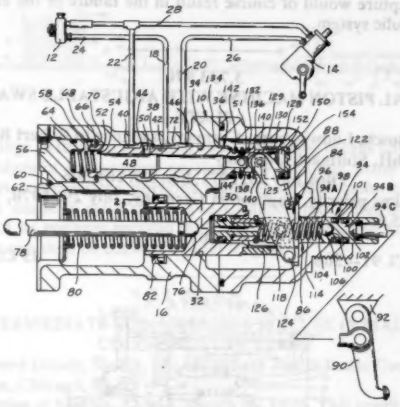
3,733,968

BRAKE PEDAL TRAVEL LIMITER FOR HYDRAULIC BRAKE BOOSTER

Lloyd G. Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 1, 1971, Ser. No. 185,612
Int. Cl. F15b *13/10*
U.S. Cl. 91—391 R **9 Claims**

A hydraulic boost device for brakes having a housing with a bore therein in communication with an inlet and an outlet. A booster piston is slidably received in the housing so that one end of the piston communicates with a pressure chamber which is in fluid communication with the bore. Valve means is slidably located in the bore for controlling fluid communication between the inlet, outlet and pressure chamber. Brake pedal operated means including a push rod and ratio changer levers are interconnected with the booster piston and the valve means so that brake pedal and push rod travel during a normal braking operation with hydraulic power assist will always be at some predetermined ratio to piston travel. Should a hydraulic failure occur in the boost device during a brake application, means effectively restricts push rod movement with respect to the booster piston thereby minimizing pedal travel.

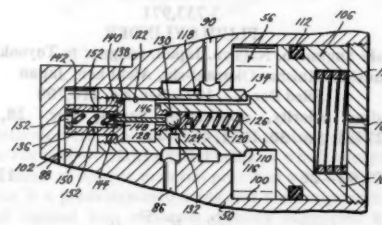


3,733,969

HYDRAULIC SYSTEM

Robert S. Andrews, St. Peters, Mo., assignor to McDonnell Douglas Corporation, St. Louis County, Mo.

Filed Mar. 15, 1971, Ser. No. 124,327
Int. Cl. F15b *13/042*
U.S. Cl. 91—421 **9 Claims**



A hydraulic system has a high pressure supply line, a low pressure return line maintained at a pressure above the ambient pressure, and a plurality of subsystems connected between the supply and return lines. At least some of the subsystems individually include a selector valve and a hydraulically operated device. The selector valve is connected to the high pressure supply line and also to the return line, the latter connection being through a discharge line. The selector valve is also connected to the hydraulically operated device for diverting high pressure fluid thereto. A check valve is interposed in the discharge line for permitting fluid to flow from the discharge line to the return line, but not in the reverse direction, and consequently before fluid will flow past the check valve into the return line the pressure within the discharge line must equal that in the return line. Each subsystem of the foregoing nature further includes a shutoff valve which senses the return pressure in the discharge line and prevents high pressure fluid from being diverted to the

hydraulically operated device when the pressure in the discharge line falls off. Accordingly, should the discharge line or any line in common with it rupture, the shutoff valve will close and the subsystem will be rendered inactive, thus preventing the loss of hydraulic fluid through the rupture when an attempt is made to operate selector valve of the ruptured subsystem. A substantial loss of hydraulic fluid through the rupture would of course result in the failure of the entire hydraulic system.

3,733,970

AXIAL PISTON MACHINE WITH ADJUSTABLE SWASH PLATE

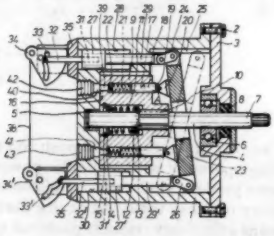
Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed July 20, 1971, Ser. No. 164,306

Claims priority, application Germany, July 29, 1970, P 20 37 635.6

Int. Cl. F01b *13/04*

U.S. Cl. 91—506 **15 Claims**



An axial piston machine wherein the swash plate is held against rotation with the cylinder block and is tiltable to both sides of its neutral position by a mechanical, fluid-operated, electrical or electronic system. The swash plate is always tilted about an axis which intersects the axis of that piston in the cylinder block which is nearest to the valve plate to thus maintain the volumes of liquid-filled spaces between the pistons in their foremost positions and the valve plate at a minimum.

3,733,971

FLUID CYLINDER

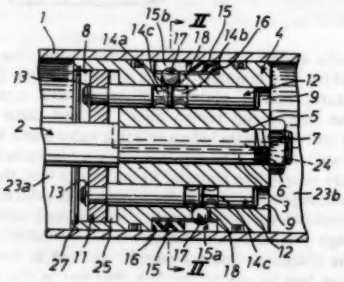
Masashi Sugimoto, Nagoya, Japan, assignor to Toyooki Kogyo Kabushiki Kaisha, Okazaki-shi, Aichi-ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,708

Claims priority, application Japan, Dec. 28, 1970, 45/127991; Jan. 30, 1971, 46/3442

Int. Cl. F15b *15/26*

U.S. Cl. 92—26 **12 Claims**



A pressure fluid cylinder having a tubular casing, a piston engaged reciprocably within the casing, two pressure chambers within the casing one on each side of the piston, a piston rod connected to the piston, an annular brake band with radial self-returning force interposed between the outer wall of the piston and the inner wall of the casing, means operative only when in its neutral position to outwardly expand the brake band to frictionally engage the inner wall of the casing and to release the brake band when out of its neutral position, resilient means for normally conditioning the operating means to its neutral position, and pressure receiving means for moving the operating means out of its neutral position upon supply of fluid pressure into either of the two pressure chambers.

3,733,972

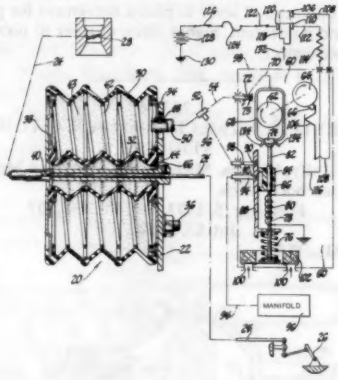
SERVOMOTOR

David D. Campbell, Lake Orion, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 849,321, Aug. 12, 1969, Pat. No. 3,603,425. This application Dec. 10, 1970, Ser. No. 96,740

Int. Cl. F01b *19/00*; **F16j** *3/00*

U.S. Cl. 92—37 **1 Claim**



A servomotor assembly having application in a vehicle cruise control system including an annular pleated bellows member having a fixed wall closing one end and a movable wall closing the other end defining a fluid pressure control chamber therein. A coil spring is disposed within the bellows member biasing the walls apart. The bellows member and the walls contain central openings receiving a control rod therethrough upon which is mounted a slidably adjustable stop member. The stop member is positioned for engagement by the movable wall during contraction of the bellows thereby actuating the control rod in accordance with the prevailing pressure fluid within the bellows member.

3,733,973

PISTON, ESPECIALLY FOR COMPRESSION IGNITION ENGINES

Gunter Elsbett, and Ludwig Elsbett, both of Hippolstein, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg, Nurnberg, Germany

Filed Feb. 18, 1971, Ser. No. 116,466

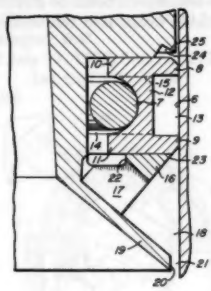
Claims priority, application Germany, Feb. 21, 1970, P 20 08 140.7

Int. Cl. F16j *1/08*

U.S. Cl. 92—159 **4 Claims**

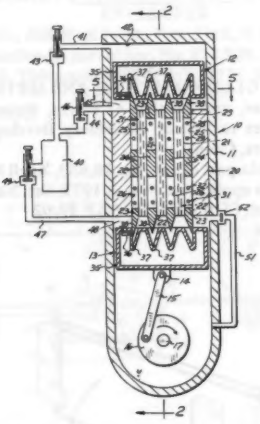
A piston, especially for compression ignition engines, which has piston rings fitted to the piston head and at least one radi-

ally sprung oil control ring in which the space at the back of the oil control ring is by at least one return flow system con-



nected with an annular space adjacent to the cylinder wall and divided from the interior of the cylinder.

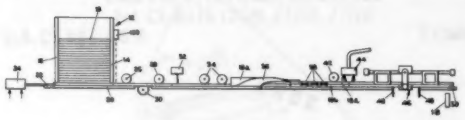
3,733,974
PISTON CYLINDER COMBINATION
Mark Schuman, 101 G St. SW, Apt. A516, Washington, D.C.
Division of Ser. No. 861,256, Sept. 26, 1969, Pat. No. 3,583,155. This application Mar. 24, 1971, Ser. No. 127,600
Int. Cl. F16j 1/00
U.S. Cl. 92—172 **12 Claims**



A cylinder separated into two opposed portions interconnected by an elongated gas passageway which is constantly heated at one end and constantly cooled at its opposite end. Gas is forced back and forth through the passageway by a free piston arranged within the cylinder portion between the heated passageway end and adjacent cylinder end and by a driven piston, connected to a power take-off shaft and arranged in the opposite cylinder portion. The pistons have faces upon which are formed saw-tooth-like fins which mesh with corresponding fins formed in the cylinder at their respective passageway openings.

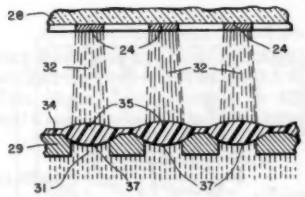
3,733,975
CORNER BLOCK FORMING APPARATUS
Chris C. Terrasi, Grand Rapids, Mich., assignor to Stack-Pac Corporation, Grand Rapids, Mich.
Filed Jan. 3, 1972, Ser. No. 215,027
Int. Cl. B31b 1/12; B31d 1/00; B26d 3/06
U.S. Cl. 93—84 R **15 Claims**

An apparatus for forming L-shaped corner posts having a hopper for dispensing seriatim multiple-ply boards of substantially uniform thickness throughout, cutting means which form an elongated groove in the board, the groove penetrating all but one ply of the board and leaving a hinge between two unequal portions. Glue is applied to the uncut surface of the board and the unequal portions of the board are folded about



the hinge to form an L-shaped block. Squaring means align the cut edges of the unequal portions in a common plane while rollers compress the portions together so that uniformity of block shape is maintained. The L-shaped block has at least one of its surfaces sprayed with a protective coating and the block can then be cut into smaller lengths.

3,733,976
INTERMEDIATE SUB-ASSEMBLY FOR USE IN MAKING COLOR PICTURE TUBES
Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Division of Ser. No. 22,963, March 26, 1970. This application Oct. 12, 1971, Ser. No. 188,319
Int. Cl. G03
U.S. Cl. 95—1 R **1 Claim**

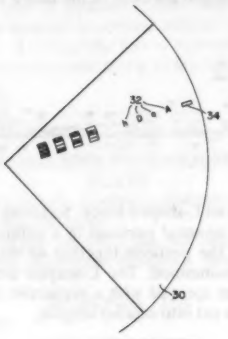


An intermediate sub-assembly for manufacturing a color cathode-ray tube of the shadow mask type which comprises a shadow mask of opaque material provided with a plurality of apertures in a predetermined array and a corresponding plurality of optical lens elements directly supported by the shadow mask and individually in registration with a respective one of the apertures to provide for optical exposure through the shadow mask of image screen areas smaller than the apertures.

3,733,977
PHOTOGRAPHIC TYPE-COMPOSING MACHINES
Grant T. Morgan, 809 S.E. 7th Avenue, Delray Beach, Fla.
Filed Sept. 10, 1971, Ser. No. 179,309
Int. Cl. B41b 17/32, 17/42
U.S. Cl. 95—4.5 R **4 Claims**

A headline/display photocomposing machine having a rotatable character matrix disc, a flash lamp, focusing and size-changing optics, and a light-sensitive image-receiving surface. Each matrix character has an associated binary four bit code positioned on the disc representing the width value of the character. The elements or bits of each code are arranged serially (rather than parallel) so that the bits are sensed one after

another as they pass a sensing station. The control circuit of the machine recognizes the width codes in terms of their value



plus three, in order that a given binary four bit code may represent any standard character width value up to 18 relative units.

3,733,978

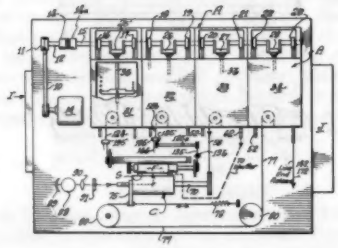
TYPE COMPOSER

Louis A. Spievak, 2905 Mandeville Canyon Road, Los Angeles, Calif.

Filed Sept. 5, 1967, Ser. No. 665,586

Int. Cl. B41b 17/06

U.S. Cl. 95—4.5 **9 Claims**



The apparatus is designed to compose justified copy on a sensitized sheet or film exposed through a movable matrix to actinic rays which impress an image of the characters carried by the matrix onto the sensitized sheet material. Operation of the composer is in response to signals from a suitable source, typically a memory unit alone or a memory unit which is operated in conjunction with a keyboard to store one or more lines of type composition prior to justification of the lines. Provision is made for flexibility in operation and product output as well as accommodation to various allied equipment.

3,733,979

PHOTOCOMPOSING APPARATUS

Charles John England, Smallfield, England, assignor to The Monotype Corporation, London, England

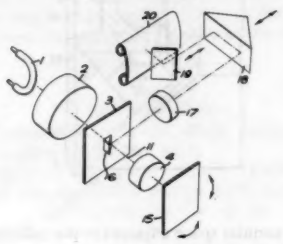
Filed July 8, 1971, Ser. No. 160,847

Claims priority, application Great Britain, July 14, 1970, 34,069/70

Int. Cl. B41b 17/12

U.S. Cl. 95—4.5 **2 Claims**

Photo-composing apparatus comprising a matrix of master characters, an optical system for forming a light beam bearing images of all the characters in the matrix, a lens for collimating the light beam, a second optical system for directing an image of a selected master character on to a photo-sensitive member, and at least one rotatable scanning mirror disposed in the path of the collimated beam to direct a selectable portion of the collimated beam into the second optical system.



The second optical system includes a lens for forming a focused image of the characters in the matrix, in the plane of a mask which has an aperture sufficient to encompass the image of only one character.

3,733,980

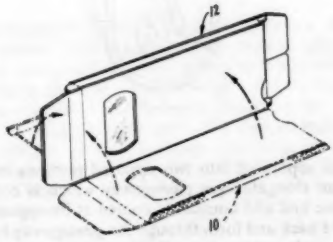
CARTON GLUING MACHINE AND METHOD

Charles E. Palmer, and Stanley A. Peters, Somers, both of Conn., assignors to Palmer Machinery Development Corporation, Somers, Conn.

Continuation-in-part of Ser. No. 26,653, April 8, 1973, abandoned. This application Nov. 4, 1971, Ser. No. 195,599

Int. Cl. B31b 1/56, 1/62, 49/02

U.S. Cl. 93—49 M **18 Claims**



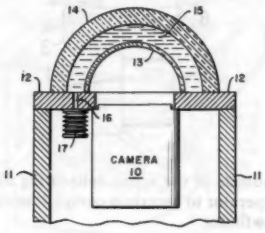
A novel carton forming apparatus has a travel path along which carton members move in rapid, continuous succession, when the machine is in operation. During such movement, intermittently movable means fold an entire longitudinal wall portion of the blank inwardly at substantially one time; means is also provided to effect contact between the wall portion so folded and a cooperating portion, in such a manner that substantially all of an area that has been rendered adhesive thereon is contacted and bonded at the same time. Novel feed mechanisms provide carton blanks in rapid succession to transport means of the machine, and novel folding mandrels and/or stationary mandrel elements may be used to effect the folding of the blanks. The invention also provides a method whereby cartons having a desirably rectilinear configuration can be formed at high production rates.

3,733,981

LENS PROTECTIVE SYSTEM FOR DEEP SEA CAMERA

Chester L. Buchanan, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 17, 1972, Ser. No. 272,244
Int. Cl. G03b *17/08*
U.S. Cl. 95—11 UW 5 Claims



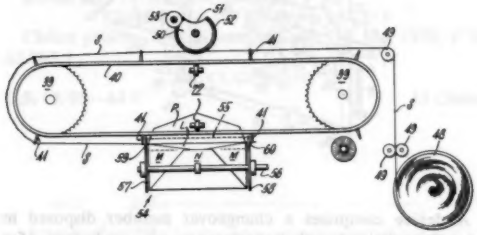
A lens arrangement for a camera useful in deep sea photography. An optical coupling fluid is provided between a protective window and the lens which absorps the pressure to protect the lens thereby permitting the use of thinner lens materials.

3,733,982

MACHINE FOR PRODUCING SELF-OPENING ENVELOPES

John Manolis, 308 West 94 St., New York, N.Y.

Continuation-in-part of Ser. No. 873,939, Nov. 4, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,749
Int. Cl. B31b *1/90*
U.S. Cl. 93—76 10 Claims



A machine for producing self-opening envelopes, feeds precut envelope blanks and advances them, transversely oriented, longitudinally along a path where successively: score lines are impressed in the blank to delineate the flaps from the front panel; the side flaps are folded and adhesive applied to its borders; the bottom flap is folded over the side flaps; a tear strip is advanced from a continuous length transversely across and above the envelope path and severed from the continuous length and depressed into engagement with an underlying envelope along a line delineating the front panel and closure flap, an adhesive having been previously applied to the tear strip; an adhesive is then applied to the closure flap border and the envelopes are then dried, closed and stacked. The tear strip applying mechanism includes a horizontal endless chain positioned above the envelope path and regularly spaced fingers depend from the chain and terminate in tear strip gripping notches. Transversely spaced severing blade and transfer fingers sever a length of tear strip from the conveyor fingers and transfer it to an underlying envelope.

ERRATA

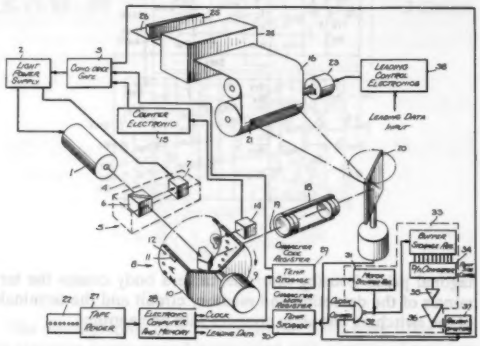
For Classes 95—1 R thru 95—4.5 see:
Patents Nos. 3,733,976 thru 3,733,979

3,733,983

PHOTOGRAPHIC COMPOSITION SYSTEM USING A GALVANOMETER MOVEMENT

David J. Sinnott, Ringwood, and Donald E. Alecci, Pine Brook, both of N.J., assignors to Star-New-Era, Inc., Hackensack, N.J.

Filed Feb. 9, 1971, Ser. No. 113,931
Int. Cl. B41b *15/00, 15/08, 17/10*
U.S. Cl. 85—4.5 R 7 Claims



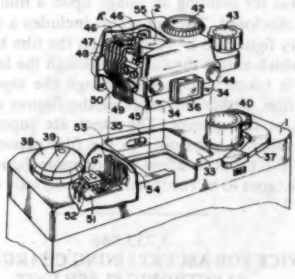
An improved photographic composition system utilizes a pulsed light source which projects a beam of light through a character information to produce an image which is reflected by a mirror onto a light sensitive sheet. The mirror is rotated by a galvanometer in response to electronic inputs so that the projected characters are properly spaced in accordance with their point sizes.

3,733,984

EXPOSURE CONTROL SYSTEMS FOR SINGLE REFLEX CAMERAS HAVING A DETACHABLE HOUSING

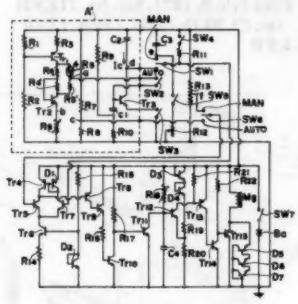
Kotaro Yata, Ikeda, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed July 3, 1972, Ser. No. 268,375
Int. Cl. G03b *7/08, 19/12*
U.S. Cl. 95—10 CT 5 Claims



In a single lens reflex camera, an exposure control system for a photographic camera is so constructed that a housing having a pentagonal prism therein is attachable to and detachable from the camera body. A detecting circuit for detecting the brightness of an object through the objective lens in an exposure control circuit and a memory circuit are built-in to the housing and a portion of the circuitry thereof is made as an integrated circuit. In the camera body a portion of the

switching circuit for controlling the exposure of an electric shutter using the output of the detecting circuit as one input is built-in as an integrated circuit. The mounting of the pen-



tagonal prism housing onto the camera body causes the terminals of the detecting and memory circuit and the terminals of the switching circuit to connect with one another.

3,733,985

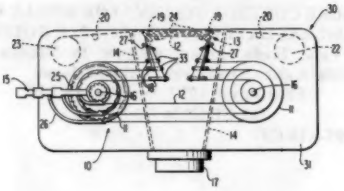
CAMERA FILM IMAGING DEVICE

Lester Gordon, 10 Louise Street, Lewiston, Maine

Filed Dec. 17, 1971, Ser. No. 209,038

Int. Cl. G03b *17/24*

U.S. Cl. 95—1.1 **8 Claims**



Apparatus for printing an image upon a film negative in a camera is disclosed. The apparatus includes a series of tapes which carry figures to be recorded on the film by a portion of the light which enters the camera through the lens at the time a picture is taken and passes through the tapes to impinge upon the film. Either the tapes or the figures carried by the tapes can be transparent. The tapes are superimposed one upon the other in proximity to the film exposure area with spaces on the tapes to allow one or more figures carried by each of the tapes to be recorded simultaneously on the film.

3,733,986

DEVICE FOR ASCERTAINING CHARGING ON ELECTRONIC FLASH UNIT

Toshio Hayashi, Sahigaoka-Nakamachi; Keisuke Maeda, Osaka, and Yoshiharu Ohta, Hyogo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

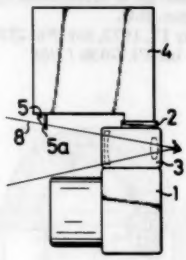
Filed Nov. 25, 1970, Ser. No. 92,773

Claims priority, application Japan, Dec. 9, 1969, 44/117282

Int. Cl. G03b *17/20*

U.S. Cl. 95—11 V **4 Claims**

A device is provided with a light-transmitting rod for conducting light from a charge-indicating lamp on an electronic flash unit into the field of view of the camera viewfinder. One end of the light-transmitting member is positioned in front of the viewfinder lens system to introduce the light from the charge indicating lamp into the part of the field of view of the



viewfinder outside of the scene-delineating frame, thereby to enable the operator to ascertain completion of charging while using the viewfinder.

3,733,987

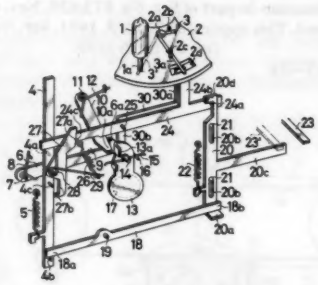
DEVICE FOR FIRING FLASHLAMPS IN CAMERA

Akira Yamanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 23, 1971, Ser. No. 155,743

Int. Cl. G03b *15/04*

U.S. Cl. 95—11.5 R **15 Claims**



A device comprises a changeover member disposed in operative relation to a shutter release member and adapted for a varying amount of movement in accordance with the need for flash photography, a detecting member whose operation is limited by the changeover member when a flash exposure is unnecessary and which detects the presence or absence of a striking member for firing a flashlamp when a flash exposure is required, and a locking member for interrupting the movement of the shutter release member in operative relation to the action of the detecting member when the detecting member detects that the striking member is not present at a predetermined tensioned position. Thus, when a flash picture is to be taken, the device prevents an exposure making operation which would otherwise be effected without firing of the flashlamp.

3,733,988

LIGHT MEASURING APPARATUS FOR A SINGLE-LENS REFLEX CAMERA

Lave Tenne, Norbyvallda, Sweden, assignor to Fritz Victer Hasselblad, Goteborg, Sweden

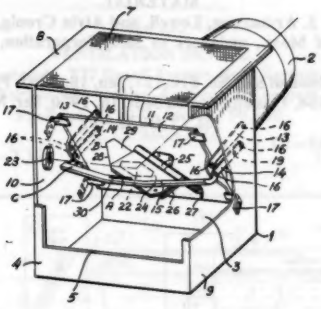
Filed June 21, 1971, Ser. No. 154,768

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **3 Claims**

A single-lens reflex camera comprises an exposure meter disposed in the ray path of the camera. A portion of the view-

finder mirror surface is made partially specular to allow for the passage of the measuring light, and the viewfinder mirror holder on its rear side is provided with a folding deviating mirror to deflect the light in the direction of a measuring cell. The



motion of the deviating mirror which deflects the measuring light to a measuring cell disposed in a side wall of the camera housing is controlled by a parallel motion guide bar which is a part of the viewfinder mirror linkage.

3,733,989

AUTOMATIC FOCUSING ARRANGEMENT

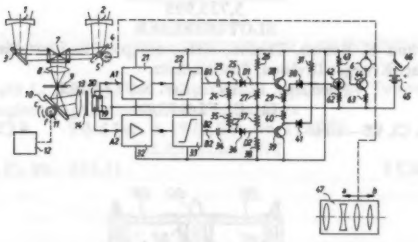
Richard Wick; Alfred Winkler, and Bernhard Von Fischern, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 23, 1971, Ser. No. 211,373

Claims priority, application Germany, Dec. 24, 1970, P 20 63 705.2

Int. Cl. G03b 3/02

U.S. Cl. 95—44 C **13 Claims**



A split image of a vertical edge of an object is formed by a standard range finder, the two half images coinciding in a vertical direction when the objective lens is properly focused. An oscillating mirror reflects light along a horizontal line including the top half image onto a first photocell and light along a horizontal line including the bottom half image onto a second photo-cell. The photocells thus emit a scanning signal when the respective half images are reflected thereon. A first and a second threshold circuit is responsive to these scanning signals and the outputs of the first and second threshold circuit are applied each to one input of and AND-gate, the output of which causes the motor positioning the objective lens to stop upon simultaneous receipt of the scanning signals.

3,733,990

PHOTOGRAPHIC FOCAL-PLANE SHUTTER

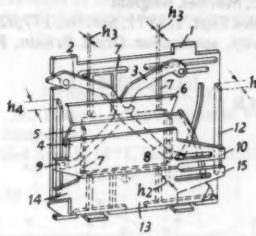
Rolf Noack, Dresden; Karl Kromer, Radebeul, and Paul Hillman, Dresden, all of Germany, assignors to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed July 19, 1971, Ser. No. 163,958

Claims priority, application Germany, Jan. 21, 1971, WP 152 632; Apr. 27, 1971, P 21 20 502.7; Great Britain, June 17, 1971, 28,512/71

Int. Cl. G03b 9/36

U.S. Cl. 95—55 **2 Claims**



The photographic focal-plane shutter has a base plate with an exposure aperture and is provided with a group of opening blades and a group of closing shutter blades. The blades are movable in planes lying parallel with the base plate. The opening shutter blade group is operated by levers which are pivoted in scissors fashion. The base plate is provided with guide skids extending from the base plate of which the opening and closing blades are guided. First and second additional skids extending from the base plate serve to guide a respective one of the levers. The skids and additional skids are of different height to effect spacing of the blades and levers from one another.

3,733,991

LENS SHUTTER

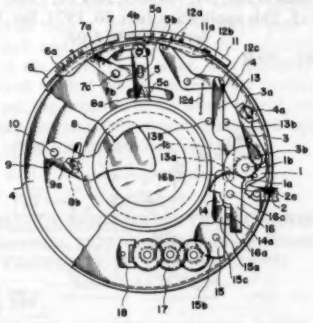
Tatsuo Kobayashi, and Masayuki Mino, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed May 28, 1970, Ser. No. 41,195

Claims priority, application Japan, June 3, 1969, 44/43007

Int. Cl. G03b 9/14

U.S. Cl. 95—63 **6 Claims**



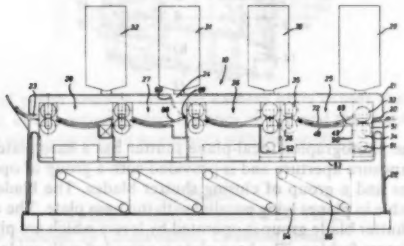
In a camera lens shutter apparatus having an exposure time setting member, an exposure setting member, and shutter blades, and structure for opening and closing the shutter blades, a first control mechanism controls the speed of the shutter blades at a maximum aperture setting and a second control mechanism additionally controls the speed of the shutter blades so that the opening and closing time interval

thereof corresponds to a settable exposure time setting. A retarding mechanism is interlocked with the blade driving means for varying the opening and closing speed of the shutter blades in accordance with the setting of an exposure time setting member.

3,733,992
DEVICE FOR PROCESSING PHOTOGRAPHIC MATERIAL

Emile Frans Stievenart, Hoboken, and Herman Fernand Verbruggen, Bercham, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sept. 1, 1971, Ser. No. 177,022
Claims priority, application Great Britain, Feb. 19, 1971, 42,015/70
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **13 Claims**

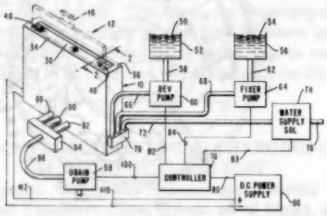


In a wet processing apparatus for photographic material wherein the material is guided at least partially through and out of a body of processing liquid by a guide plate having a grooved surface and extending upwardly from below the liquid level to an egress end above the liquid level, a plurality of openings are formed in the plate intermediate the liquid level and egress end, with each opening communicating with at least one groove, to permit the overflow of the liquid therethrough. Preferably, an anti-siphon passageway connects each such opening with the atmosphere.

3,733,993
APPARATUS FOR DEVELOPING PHOTOGRAPHIC MATERIALS

Daniel J. Lasky, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 744,405, July 12, 1968, Pat. No. 3,615,515. This application June 30, 1971, Ser. No. 158,563
Int. Cl. G03d *3/04*
U.S. Cl. 95—89 R **7 Claims**

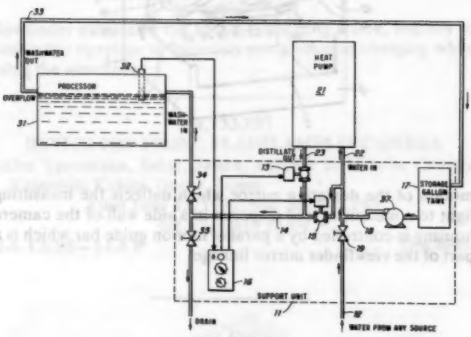


Photographic elements are immersion developed with image-dependent agitation of the developer relative to the element surface. Development releases negatively charged waste particles that congregate adjacent the image areas. A negatively charged electrode in the developer tank electrolyzes the developer releasing a uniform stream of fine hydrogen bubbles. This electrode is situated so that the bubbles gently scrub the face of the element, dislodging the waste particles. A positively charged electrode attracts the particles, permitting fresh developer to reach developing image areas.

3,733,994
APPARATUS FOR WASHING OF PHOTOGRAPHIC MATERIAL

Clarence J. Armstrong, Lowell, and Alvin Cronig, Lexington, both of Mass., assignors to Stek Corporation, Lexington, Mass.

Division of Ser. No. 610,127, Jan. 18, 1967, Pat. No. 3,531,284. This application Sept. 16, 1970, Ser. No. 72,739
Int. Cl. G03d *3/02*
U.S. Cl. 95—97 **5 Claims**



An apparatus for controlling the contamination level of photo wash water supporting an environment for ionic substitution of simple thiosulfate salts in the water with complex argento thiosulfates on the photographic emulsion surface. A water purifier is placed in closed loop with the wash tank to control the level of contamination.

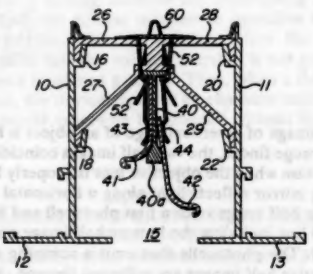
ERRATUM

For Class 95—11 UW see:
Patent No. 3,733,981

3,733,995
SLOT DIFFUSER

Carlton E. Brown, Tucson, Ariz., assignor to Lear Siegler, Inc./Krueger Division, Tuscon, Ariz.

Filed Apr. 12, 1971, Ser. No. 133,292
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **4 Claims**



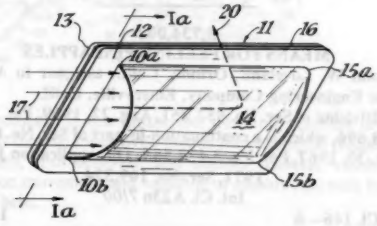
A diffuser construction utilizing elongated parallel, spaced-apart side walls interconnected by a bridge member having extensions fitting into channels provided therefor in the side

walls. An intermediate wall is positioned an equidistance from the side walls and is held in firm abutting relationship with the bridge through the expediency of an assembly clip straddling the bridge and snapping the upper portion of the intermediate wall. Adjustable vanes slidably engage the surfaces of the intermediate wall and may be positioned to divert conditioned air passing downwardly between the side walls and out through a slot formed between the bases of the side walls.

3,733,996
VENTILATION DEVICE

James E. Naccarato, 727 Broad Avenue, Belle Vernon, Pa., and David R. Farkas, 904 Monroe Avenue, McKeesport, Pa.

Filed Jan. 4, 1971, Ser. No. 90,168
Int. Cl. B60h 1/24
U.S. Cl. 98—2.12 **11 Claims**

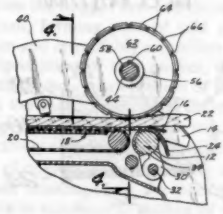


This invention relates to a ventilation device which may be used in an aircraft window and which has an outer rigid portion peripherally surrounding at least a portion of an inner flexible portion and physically connected thereto. The inner flexible portion has at least one portion thereof having a lineal physical dimension greater than the distance between first points on the outer rigid portion where the flexible portion physically connects at the first points on the outer peripheral rigid portion. The inner flexible portion has a second portion thereof having a lineal physical dimension substantially equal to the distance between second points on the outer rigid portion where the flexible portion connects to the outer rigid portion. This structure thereby forms a flexible fluid medium ventilation device whenever the flow of the fluid medium is in the direction of the second points from the first points.

3,733,997
HOLD DOWN ATTACHMENT FOR A SKINNING MACHINE

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Feb. 8, 1971, Ser. No. 113,270
Int. Cl. A22c 17/12
U.S. Cl. 99—233.11 **6 Claims**

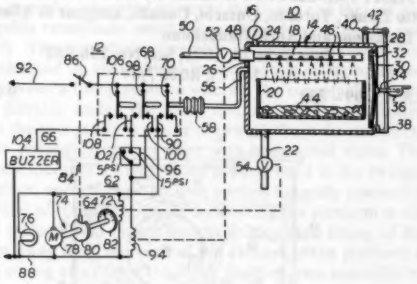


A hold down attachment for a skinning machine comprising a hold down roller means rotatably mounted above the feed roller and skinning blade of the skinning machine. The hold down roller means is comprised of a plurality of spaced apart resilient rollers mounted on a driven shaft and adapted to engage the slab being skinned. The configuration of the resilient rollers is such that the slab is simultaneously stretched in two lateral directions as the slab is being skinned which maintains the bottom of the slab in a straight or horizontal condition as it engages the skinning blade. A modified form of the hold down roller means is also disclosed and comprises a plurality of spaced apart rollers, each of which are comprised of four spring loaded shoes extending outwardly from a central hub portion. The spring loaded shoes engage the slab being skinned and simultaneously stretch the slab in two lateral directions as the slab is being skinned to maintain the bottom of the slab in a straight or horizontal condition to achieve the same results as the first described embodiment.

3,733,998
PRESSURE COOKER

Alfred Vischer, Jr., Tucson, Ariz., assignor to Vischer Products Company, Chicago, Ill.

Filed Apr. 6, 1971, Ser. No. 131,639
Int. Cl. A47j 27/14
U.S. Cl. 99—330 **8 Claims**



To control the pressure in a steam cooker, a switch arm of a pressure actuated switch is normally closed to a first contact that is in series with and energizes the coil of a normally-closed, solenoid-operated valve to permit steam to enter the steam cooker. The switch arm breaks with the first contact at 5 psi in the steam cooker and makes with a second contact that is in series with a single-throw, single-pole manually-operated switch and with the coil of the solenoid-operated valve to hold the valve open when the manually-operated switch is closed so that the pressure in the cooker is maintained at 15 psi, the pressure of the steam source, and to close the valve when the manually-operated switch is open so that the pressure in the cooker is maintained at 5 psi.

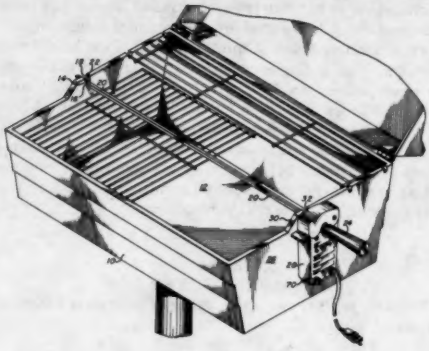
3,733,999
BARBECUE SPIT AND DRIVE MECHANISM

Bernard J. Bernstein, 3629 North 5th Avenue, Phoenix, Ariz.

Filed Feb. 19, 1971, Ser. No. 116,996
Int. Cl. A47j 37/04
U.S. Cl. 99—337 **2 Claims**

A barbecue spit and drive mechanism having upwardly open concave cradle type bearings in which a spit is rotatably mounted; a rotary gear disposed on a spit and adapted to engage a motor driven gear when the spit is in said upwardly open concave bearings, whereby the loaded spit may be readily and conveniently moved vertically downward into engagement with said bearings and into driving relationship with said motor driven gear. The mechanism also includes a safety cover, for the gear on said spit, adapted to prevent rotation of

said gear on said spit when said cover is in open position relative thereto; and means operable by said cover adapted to



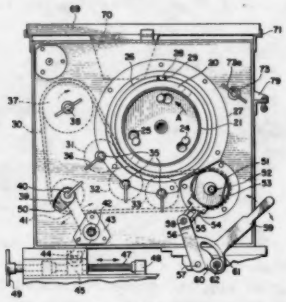
prevent rotation of said spit when said cover is in open position over said gear on said spit.

3,734,000

MEAT PROCESSING AND SEPARATING APPARATUS

Otto Ziener, Toronto, Ontario, Canada, assignor to Allan John Lackstone and Adele Handelman

Filed June 24, 1971, Ser. No. 156,182
Int. Cl. B02b 7/04
U.S. Cl. 99—539 9 Claims



This specification discloses an apparatus for separating edible products such as meat, flesh or fish from bone, carcasses and the like, having a rotary drum with a large number of small holes or perforations therethrough, driven at a predetermined speed and a pressure belt, one side of which is pressed firmly into contact with the drum and is adapted to move in the same direction as the drum, and having a series of pressure rolls forcing the belt into engagement with the drum at spaced points therearound, and adjustment means for tensioning the belt to the tension most suitable for the particular product being processed, and having scraper means for scraping the bone and cartilage residue and other material adhering to the exterior of the drum, and rammer means for ramming the carcasses between the moving belt and drum.

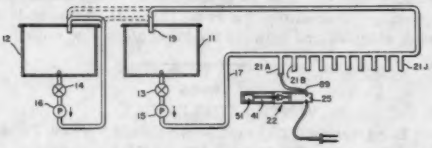
3,734,001

BASTING MATERIAL INJECTION SYSTEM

Marvin B. Poster, Rte. 1, Forest Hills, Harrisonburg, Va.

Filed June 8, 1971, Ser. No. 151,070
Int. Cl. A23b 1/16
U.S. Cl. 99—532 6 Claims

In the injection system disclosed herein, a precisely preselectable quantity of basting material is injected into the flesh of a meat fowl by means of an injection cylinder, the stroke of which is precisely controlled by a pilot valve mechanism. The injection cylinder draws basting material



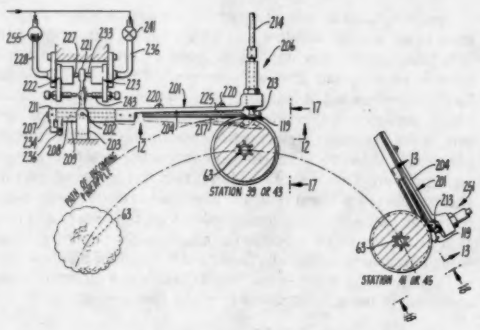
from a supply conduit through which the material is continuously circulated, assuring that suitably mixed basting material is continuously available.

3,734,002

MEANS FOR PEELING PINEAPPLES

Malcolm W. Loveland, Orinda, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Division of Ser. No. 852,251, Aug. 22, 1969, Pat. No. 3,638,696, which is a continuation-in-part of Ser. No. 612,584, Jan. 30, 1967, Pat. No. 3,473,588. This application Jan. 25, 1971, Ser. No. 109,324
Int. Cl. A23n 7/00
U.S. Cl. 146—6 11 Claims



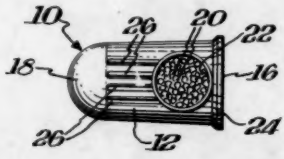
Means are provided for peeling and preparing pineapples with a minimum of hand labor and a maximum yield of fruit for canning and other uses.

3,734,003

ONION PEELER

Samuel L. Gerson, Wilmington, Del., assignor to Restaurant Equipment Design Co., Wilmington, Del.

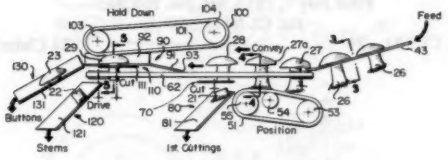
Filed Oct. 6, 1971, Ser. No. 186,850
Int. Cl. A47j 17/00
U.S. Cl. 99—588 10 Claims



Sharp abrasive particles are glued to an area near the base of an elongated rubber fingertip which has raised projections between the closed end of the tip and the sharp particles. The

sharp particles gouge ends of skin out of the onion, which are rubbed and stripped off by the projections. This operation is preferably performed under water to suppress annoying juices and odors.

3,734,004
AUTOMATIC MUSHROOM TRIMMING MACHINE
Anthony V. Losito, West Grove, Pa., assignor to Losito Mushroom Corporation, Toughkenamon, Pa.
Filed Oct. 19, 1970, Ser. No. 81,652
Int. Cl. A23n *15/04*
U.S. Cl. 146—78 R **10 Claims**

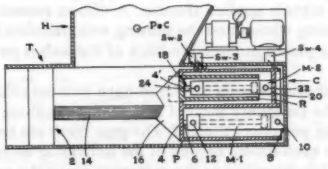


An automatic, in-line mushroom trimming machine is provided that includes improved means for sequential feeding of mushrooms, root removal, and bottom removal which are based upon movement and handling of mushrooms with foam-surfaced belts.

ERRATUM

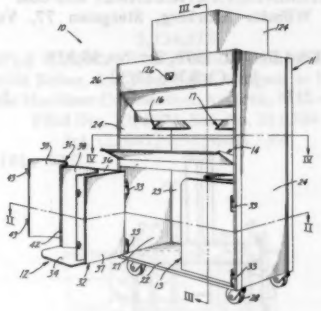
For Class 99—462 see Patent No. 3,733,702

3,734,005
WASTE COMPACTING APPARATUS
Rudi Richard Vogel, R.R. No. 1, Preston, Ontario, Canada
Filed Jan. 19, 1972, Ser. No. 219,032
Int. Cl. B30b *15/22*
U.S. Cl. 100—52 **8 Claims**



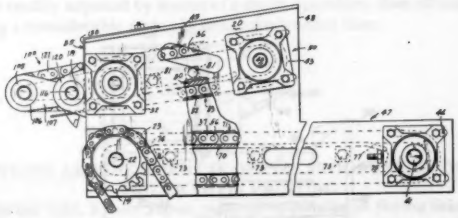
Waste compacting apparatus comprising a hopper; a compaction tunnel communicating with the hopper and providing an outlet for waste deposited therein; a packer located and reciprocable through successive forward and return strokes to advance waste from the hopper into and through said compaction tunnel, a ram, forming part of said packer, normally telescoped therein and retractably extendible therefrom in the direction of reciprocation of said packer, the ram having a leading end which forms a small portion of that of the packer as a whole when the ram is telescoped therein; motor means for reciprocating said packer through successive cycles of operation respectively comprising forward and return strokes, a standard cycle of operations commencing at a lead-off position with the ram telescoped in the packer and re-cycling means, responsive to mechanical stalling of the packer in the forward stroke of a standard cycle of operations, for terminating the forward stroke, returning said packer to its lead-off position, and initiating a special cycle of operations comprising forward and return strokes in which the forward stroke is effected with the ram extended.

3,734,006
WASTE DISPOSAL SYSTEM
Ransom J. Hennells, Plymouth, Mich., assignor to Compactor Company, Inc., Belleville, Mich.
Filed Nov. 7, 1969, Ser. No. 874,940
Int. Cl. B30b *1/32*
U.S. Cl. 100—53 **21 Claims**



A waste compacter comprising a cabinet having an extendible ram assembly mounted adjacent the upper end thereof and a swingable receptacle assembly positionable below the ram assembly. The receptacle assembly includes a platform hingedly mounted on the cabinet for horizontal swinging movement between a filling position wherein the receptacle is positioned directly under the ram, and an emptying position wherein the receptacle is swung outwardly from the cabinet to facilitate unloading of bags filled with compacted waste. The receptacle includes a first arcuate portion fixed to the swingable platform and a second arcuate portion hingedly connected to the fixed portion. The hinges connecting the platform to the cabinet include cam means for causing upward lifting of the platform away from the base of the cabinet as the platform is initially swung away from the filling position. ram assembly includes a telescoping fluid pressure cylinder having a compacting shoe on the lower end thereof.

3,734,007
CONVEYOR PRESS
Gerhard J. Husen, Tacoma, Wash., assignor to Hygrade Food Products Corporation, Detroit, Mich.
Filed Mar. 1, 1971, Ser. No. 119,579
Int. Cl. B30b *5/04*
U.S. Cl. 100—152 **10 Claims**



A conveyor for deformable items such as meat for use as an infeed to a secondary device which concludes a lower conveyor bed for movement in a given direction with a support plate positioned under the product carrying surface and an upper conveyor inclined at an angle to the lower conveyor and moving therewith with a support plate under the product contacting surface, the lower conveyor extending beyond one end of the upper conveyor whereby a product may be placed on

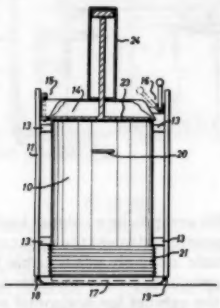
the extension of the lower conveyor and moved in between the upper and lower conveyor where it will be contacted by both and compressed while being conveyed to the outlet end of the conveyor.

3,734,008

ARRANGEMENT IN RECEPTACLES FOR RECEIVING MATERIALS, PARTICULARLY REFUSE

Olof Robert Wilhelm Akerberg, Storgatan 77, Vetlanda, Sweden

Filed Dec. 21, 1970, Ser. No. 99,959
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **2 Claims**



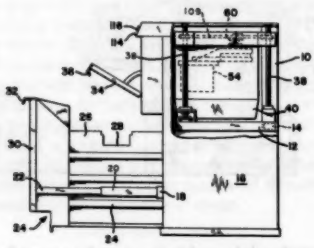
A refuse receptacle that compacts the refuse deposited therein and places the compacted refuse in a bag or like container. The receptacle comprises a tubular element, a cover pivoted thereto and having a compressing mechanism including a pressure plate to be moved down into the tubular element, and a bottom plate from which the tubular element can be detached and moved axially. When the bottom plate is nondisplaceably connected to the tubular element the refuse is compacted, and when the bottom plate is loosened from the tubular element the refuse is pushed out of the tubular element down into the bag which is loosely passed onto the tubular element and has its bottom supported on the bottom plate.

3,734,009

COMPACTOR AND DRIVE ASSEMBLY

Einar O. Engerbretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Nov. 2, 1971, Ser. No. 194,891
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 A **12 Claims**



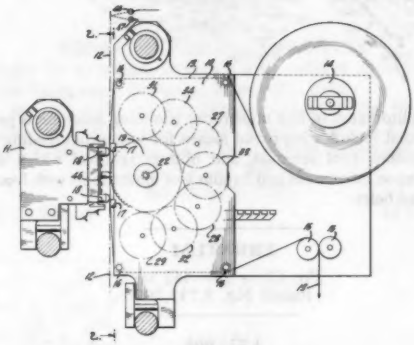
A trash compactor including a housing, a trash receptacle movable into and out of the housing and a hollow ram which is vertically reciprocal into and out of the trash receptacle when the receptacle is positioned fully within the housing. The motor, drive sprockets, chains, etc. are all mounted on the ram structure, with the motor actually positioned within the hollow ram to provide an exceptionally compact construction. The drive assembly drives three, triangularly oriented sprockets which are internally threaded and threadably engage stationary jack screws correspondingly positioned within the housing. Driving the three sprockets, therefore, causes the ram and drive assembly to move upwardly and downwardly on the stationary jack screws.

3,734,010

HIGH SPEED NUMBER PRINTER

Richard L. Le Gault, Brooklyn, N.Y., and Per Lennart Andersson, Berwyn, Pa., assignors to Heller Roberts Instrument Corp., Brooklyn, N.Y.

Filed July 7, 1971, Ser. No. 160,343
Int. Cl. B41j *5/30*
U.S. Cl. 101—79 **24 Claims**



A numbering station for a high speed printing machine is disclosed. The numbering station numbers a web moving through and being printed upon at other stations in the printing machine. At the numbering station a plurality of parallel numbering wheels, mounted on a common axis, are each individually positioned by a separate stepping motor in response to electric signals applied thereto. A ribbon passed between the numbering wheels and the moving web transfers ink to the web when a platen mounted in back of the web is periodically actuated.

The numbering wheels disclosed have numbers along a first sector of the periphery thereof and gear teeth along a second sector of the periphery thereof. The gear teeth are engaged by other gears each driven by one of the individual motors. Electrical signals are applied to the motors to move the numbering wheels to predetermined positions in response thereto. The numbers on the numbering wheels are arranged in an interlaced sequence to minimize the amount of travel necessary for consecutive numbering. A special stepping motor drive system is also disclosed which efficiently advances such numbering wheels.

3,734,011

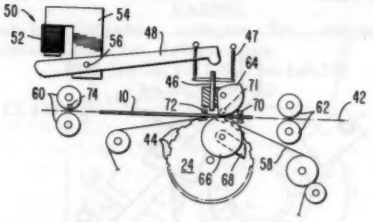
DOCUMENT ENCODING APPARATUS

Richard M. Williams, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 17, 1970, Ser. No. 72,921
Int. Cl. B41l *47/46;* **B41f** *13/48*
U.S. Cl. 101—91 **14 Claims**

Apparatus for printing on unit records or documents of at least two different lengths as they are being rapidly conveyed along a path and being operable to enter printed data thereon in designated field areas of the documents regardless of the lengths thereof. Included is a printing or encoding station having a print wheel for entering data in the field areas of the documents as they pass therethrough and further having a first photodetector on the downstream side of the station for

sensing the leading edge of a document in the station and a second photodetector on the upstream side of the station for sensing the presence of the trailing portion of the document. Coupled to the photodetectors is an electrical control circuit which responds to the sensing of the leading and trailing portions of a document in the station for determining the distance from the leading edge of the document where data for the first of the several field areas will be entered thereon. Such distance determining means may be optionally controlled by a



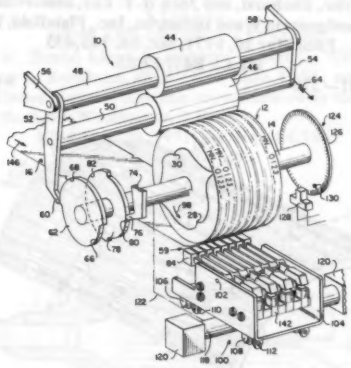
manual switch when batches of similar length documents are conveyed through the encoding station or controlled automatically by a circuit provision cooperating with the photodetectors and capable of determining the lengths of the documents passing through the station and spacing the entry of the data on the documents in accordance therewith. A feature of the invention relates to a further provision for making a fine adjustment in the event the locating of the field areas on the documents deviate from prescribed specifications.

3,734,012

SELECTIVE ROLLER INKER MEANS FOR HIGH SPEED SELECTIVE TYPE DRUM

Orville C. Huggins, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 2, 1971, Ser. No. 167,970
Int. Cl. B41j 27/14
U.S. Cl. 101—93 C **2 Claims**



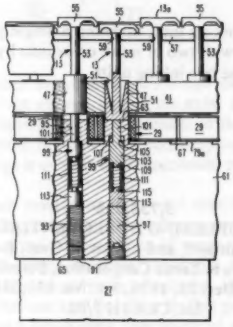
A printing apparatus for printing a color bar code and alpha-numerics on a label. The apparatus includes first and second groups of characters positioned on first and second portions, respectively, of a printing drum to form a ring of characters therearound. A first inking roll supplies a first ink to the first group of characters, and a second inking roll supplies a second ink to the second group of characters as the drum is rotated. A carriage having print hammers thereon is shifted slightly between first and second positions in timed relation with the rotation of the drum. Several rings of characters composed of the first and second groups of characters are placed axially along the drum. The bars used for printing the color bar code are aligned in a shuttling pattern on the drum, with the long dimension of the bars being transverse to the rotating axis of the drum.

3,734,013

MULTIPLE HAMMER MAGNETIC POLE PIECE BLOCK

Karl Arnold Belser, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,504
Int. Cl. B41j 9/38; H01f 7/04
U.S. Cl. 101—93 C **6 Claims**



A print hammer actuating assembly for a high speed printer, wherein a one-piece magnetic block is secured to a first core structure to provide a second core unit which includes a multiplicity of integral pole pieces. The block is of elongated construction and it has a series of spaced apart projections extending transversely to its longitudinal axis to provide discrete pole pieces. A series of elongated bores extend transversely to the longitudinal axis of the block in alignment with each of the projections. A hammer actuator assembly is disposed in each bore. A bucking coil contiguously surrounds each of the projections to provide a series of selectively energizable magnetic fields for operating each hammer actuator. With such an arrangement, the single pole piece block may be readily manufactured and assembled, at reduced cost. In addition, the working distance between tips of hammers and the paper may be readily adjusted by means of a single operation, thus affording a considerable saving in field maintenance time.

3,734,014

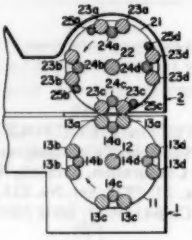
INKING ARRANGEMENT IN OFFSET PROOF PRESS FOR MULTICOLOR PRINTING

Osamu Oda, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Horikawa-dori, Kamigyo-ku, Kyoto, Japan

Filed Apr. 8, 1971, Ser. No. 132,412
Claims priority, application Japan, Aug. 20, 1970, 45/72343
Int. Cl. B41f 3/28, 3/42
U.S. Cl. 101—186 **8 Claims**

An inking arrangement in an offset proof press for multicolor printing comprising a stationary inking unit and a carriage inking unit having plural groups of rollers, respectively, each roller group representing a particular color. Control

means are provided for selectively matching one roller group in the carriage inking unit with a predetermined roller group



in the stationary inking unit, allowing a single proof press to print successively with two or more color inks by the cooperative control of these two inking units.

3,734,015

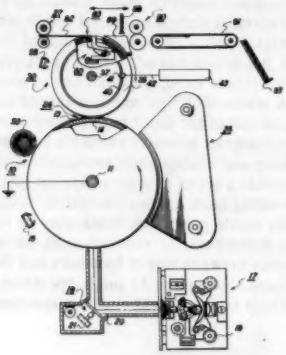
SINGLE PASS DUPLEXING BY SEQUENTIAL TRANSFER

Thomas Camis, Fairport, and Steven A. Goss, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 101,018

Int. Cl. B41f 5/02

U.S. Cl. 101—229 **3 Claims**



Method and apparatus are herein disclosed for producing duplex copy. First and second toner images are sequentially formulated on a moving image retaining element. A biased transfer roll is arranged to move in contact with the image retaining element whereby the first image is electrically transferred and temporarily stored on the roll surface. A sheet of final support material is placed over the first image and the top side of the sheet brought into contact with the second image whereby the second image is transferred to the top of the sheet. Finally, corona is applied to the top of the sheet of a magnitude and polarity to cause the first image to be transferred from the roll surface to the sheet and the sheet removed from the roll.

3,734,016

DEVICE FOR PRESELECTION OF THE NUMBER OF PRINTED PAPER SHEETS

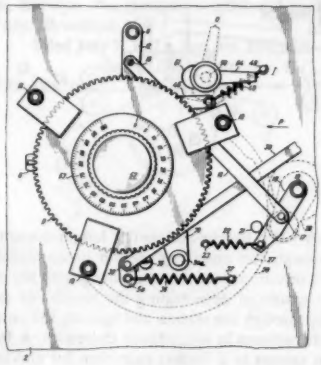
Jaroslav Jiruse, Blansko, Czechoslovakia, assignor to Adamovske strojirny, Narodni podnik, Adamov, Czechoslovakia

Filed Dec. 21, 1970, Ser. No. 100,144

Claims priority, application Czechoslovakia, Dec. 28, 1969, 8531/69

Int. Cl. B41l 39/02, 39/14

U.S. Cl. 101—232 **9 Claims**



A printing press, having a pair of shiftable cylinders, a paper feed, means for operating said press and a control system. Apparatus for counting the printed paper sheets, including an escapement mechanism directly connected to the cylinders and means for setting the ratchet for a predetermined number of indexes. The ratchet being connected to the control system to regulate the same on completion of the printing of a predetermined number of sheets.

3,734,017

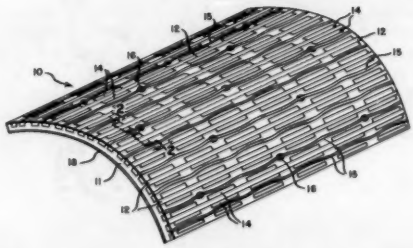
MAGNETIC SUPPORT FOR FLEXIBLE PRINTING PLATE

James J. Trier, Elmhurst, and John H. F. Enz, Somerville, both of N.J., assignors to Wood Industries, Inc., Plainfield, N.J.

Filed May 20, 1971, Ser. No. 145,433

Int. Cl. B41f 27/02

U.S. Cl. 101—378 **9 Claims**



A curved support adapted to be mounted on a plate cylinder of a rotary printing machine for supporting thereon a flexible printing plate having a magnetizable metallic backing layer. The support has a metallic liner with magnetic elements thereon for holding a printing plate thereto. Circumferentially spaced metal bars extend over the length of the support and the spaces between the bars and magnetic elements are filled with a combination of a plastic resin and a hardener to envelope the liner, magnetic elements and the metal bars.

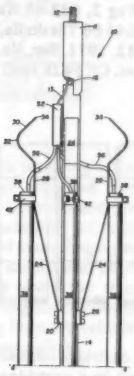
A method of making a support having a metallic liner therein utilized in holding a flexible printing plate to a printing cylinder involving the steps of affixing a plurality of first metal bars to the liner, positioning magnetic elements on the liner, positioning a plurality of second metal bars on the liner, and casting a plastic resin onto the liner to encase the magnetic elements and the metal bars.

3,734,018

EXPLOSIVE ASSEMBLY FOR RESTORING DAMAGED CASING

Ernest Lee Gillingham, Arlington, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed July 26, 1971, Ser. No. 166,160
Int. Cl. F42b *1/02*
U.S. Cl. 102—20 **9 Claims**



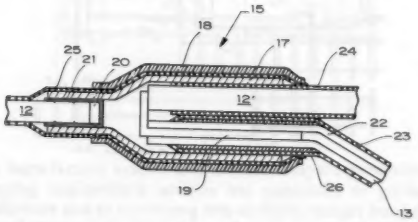
Disclosed herein is an explosive assembly for restoring collapsed or otherwise damaged oil well casing to its original shape. The assembly includes one or more elongated housings having shaped explosive charges within a carrier therefor and detonating components.

3,734,019

VENT AND DESTRUCT SYSTEM

Albert W. Rentz; Lloyd J. Jackson; Robert C. Willard, and Vernon D. Burklund, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1971, Ser. No. 184,966
Int. Cl. C06c *5/06*
U.S. Cl. 102—27 R **3 Claims**



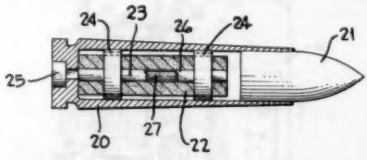
A vent and destruct system for balloons and the like which utilizes pyrotechnic strands covered with tubes of braided copper wire to perform the functions of venting and destructing. The braided copper wire covering on the pyrotechnic strands provides a safety means by preventing static electricity from accidentally igniting the pyrotechnic strands when the system is being attached to a balloon or the like. When the system is activated the tubes of braided copper wire are destroyed by the heat produced by the pyrotechnic strands.

3,734,020

IGNITER FOR PROPELLING CHARGES

Thomas Q. Ciccone, Langhorne, and Martin Visnov, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1971, Ser. No. 185,495
Int. Cl. F42b *5/02*
U.S. Cl. 102—40 **10 Claims**



A small caliber ammunition cartridge case containing a molded propellant charge having an axial igniter extending longitudinally through a central passage in the molded charge in which complete breakup and consumption of the molded propellant charge is achieved and increased projectile velocity is obtained.

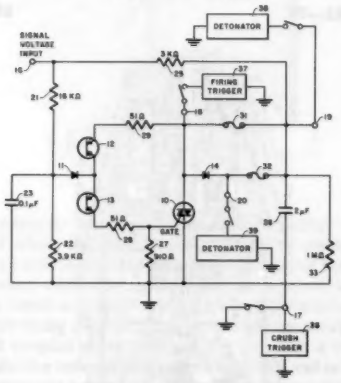
This invention relates to improved small arms cartridges having an axial-type igniter. The advantages of an axial type igniter including the achievement of more uniform ballistics and particularly more uniform projectile velocity in small arms ammunition have been disclosed in U.S. Pat. No. 3,103,884 to Ciccone and Scanlon. In this previous work, the axial igniter was a detonating type material and consequently an explosive train was required to operate or cause the axial igniter to function. A booster of PETN (penta erythritol tetranitrate $C_5H_8(ONO_3)_4$) and lead azide was used between the primer and the igniter in order to assure combustion of the igniter.

3,734,021

SOLID STATE FUZE SELECT CIRCUIT

Joe A. McKenzie, Riverside, and Charles E. Engel, Upland, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 16, 1969, Ser. No. 862,629
Int. Cl. F42c *11/00, 15/40, 19/12*
U.S. Cl. 102—70.2 R **3 Claims**



A circuit arrangement using inexpensive electrical fuzes in a solid state circuit for selecting different combinations of

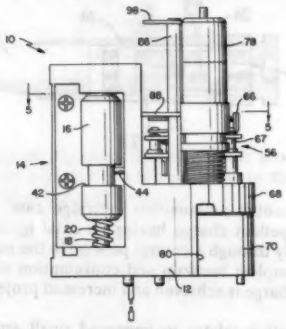
detonators by blowing different combinations of two fuzes depending upon the voltage and polarity of a signal applied thereto.

3,734,022

SEQUENTIALLY INTERLOCKED ARMING DEVICE

Russell E. Bowers, and Norman L. Warpenburg, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ill.

Filed June 21, 1971, Ser. No. 155,064
Int. Cl. F42c *15/24*
U.S. Cl. 102—78 **9 Claims**



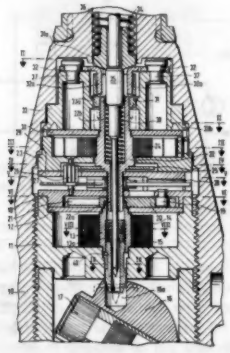
A sequentially interlocked arming device for providing the capability for the dudding of a fuze if arming events do not occur in the programmed sequence is disclosed. The sequentially interlocked arming device comprises a retardation sensor, timing delay, an out-of-line explosive train (slider), and an interlock lever which prevents the rotational movement of the slider into in-line position in the absence of a proper sequence of arming functions to prevent premature initiation of the fuze.

3,734,023

FUSE FOR THE SAFE AND PRECISE DETONATION OF EXPLOSIVE PROJECTILES

Paul Kaiser, Schramberg, and Rudolf Weber, Schramberg-Sulgen, both of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed Dec. 9, 1971, Ser. No. 206,295
Claims priority, application Germany, Dec. 15, 1970, P 20 61 765.6
Int. Cl. F42c *15/22*
U.S. Cl. 102—79 **15 Claims**



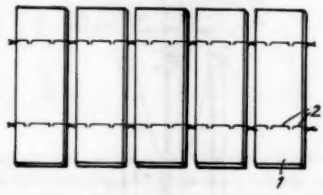
A detonating fuse for a fired, spinning projectile, which fuse includes a primer-supporting rotor which is prevented from being moved from a safety to a firing position by means of a spring-biased safety lever. The safety lever is prevented from swinging out, under the influence of centrifugal force, by means of a rotatable spring core member. The core member is locked against rotation by an anchor until the projectile is fired at which time the anchor is released and the core member is rotated in a predetermined angle by a draw spring to release the safety lever. Continued rotation of the core member releases a pair of swingable levers to enable a biasing means to push a firing pin into the rotor which has been moved to its firing position by centrifugal force. The core member and safety lever further include mutually engageable stops to prevent unintentional detonation during transport.

3,734,024

POWDER PROPELLANT CARTRIDGE

Henry Andersson, Timmermansvagen 7 G, 632 23 Eskilstuna; Goran Dahl, Alfens Vag 2, 653 45 Karlstad, and C. G. Arnell, Solrosgatan 12, 644 00 Torshalla, all of Sweden

Filed Oct. 12, 1971, Ser. No. 188,351
Int. Cl. F42b *1/00*
U.S. Cl. 102—100 **2 Claims**



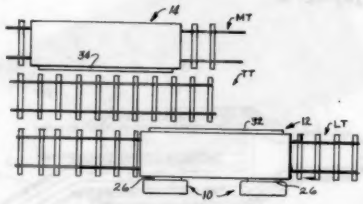
A powder propelling cartridge consisting of powder strips or rods uniformly arranged in a cartridge-casing. The strips or rods are connected to each other by threads or similar means which are applied perpendicularly to longitudinal axis the strips or rods so as to form a snow fence-like belt, which is coiled and inserted into the cartridge-casing.

3,734,025

INTEGRATED METHOD AND APPARATUS FOR CONTINUOUS PASSENGER OR FREIGHT TRANSPORT

Richard E. Shoemaker, Sweetbriar Apts., Apt. M-3, Oregon Pike & Roseville Road, Lancaster, Pa.

Filed June 8, 1970, Ser. No. 43,991
Int. Cl. B61k *1/00*
U.S. Cl. 104—88 **12 Claims**



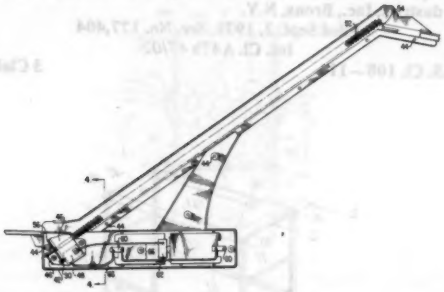
Method and apparatus for continuous movement of passengers or containerized freight at a substantially uniform rate of speed over a roadbed, either rail or highway, comprising a completely integrated system of pick up and delivery service in designated, adjacent roadbed areas, of origin and destination trip recording, and of in motion side-by-side transfer of passengers or freight between transfer vehicles and through transport vehicles at any or all established service areas along the main roadbed.

3,734,026

COASTER VEHICLE AND TRACKWAY

Makoto Saito, Tokyo, Japan, assignor to Tomy Company, Inc., Tokyo, Japan

Filed June 17, 1971, Ser. No. 154,067
Int. Cl. B61b *13/00*; A63h *18/04*
U.S. Cl. 104—167 9 Claims



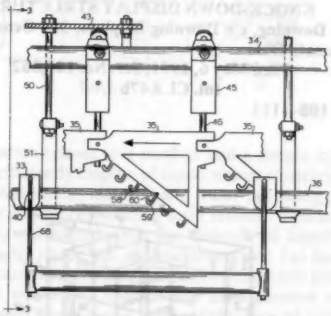
An amusement device featuring a continuous trackway having a first end of lower elevation than a second end, a lift mechanism interposed between and connected to the ends of the trackway and including an elongated helical screw powered by a motor and extending upwardly from the first end of the trackway to the second end thereof and a coaster vehicle arranged to travel along the trackway and up the lift mechanism as the rotating screw continuously contacts one or more hooks depending from the vehicle urging the vehicle upwardly along the lift mechanism.

3,734,027

INTRA-FACTORY SYSTEM AND METHOD FOR UTILIZING POWERED AND FREE CONVEYOR SYSTEMS

Paul L. Brummett, and Sigmund G. Isley, both of Smithfield, N.C., assignors to Amerel Company, Inc., Smithfield, N.C.

Filed Feb. 18, 1971, Ser. No. 116,493
Int. Cl. B65g *17/12*, *17/42*
U.S. Cl. 104—172 S 9 Claims



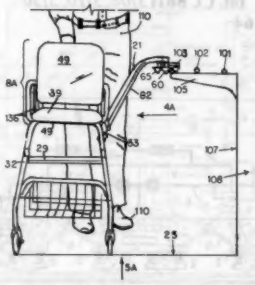
An intra-factory system and method adapted generally to conveying non-uniform articles but especially to garment manufacture and to conveying non-uniform, hanger hung garments such as coats, shirts, blouses, jackets and the like, are based on the employment of a powered, continuously moving, coding type, e.g. a "Railex" type, conveyor to intermittently and selectively engage and move garment loading trolleys which roll on an adjacent but completely separate non-powered, monorail, e.g. a "Speedrail" type, conveyor whereby manual pushing of the trolleys on the monorail between stations is eliminated without interfering with the normal coding, conveying, pickoff and loading operations on the powered conveyor.

3,734,028

GUIDED CAFETERIA HIGH CHAIR

William D. Robertson, 4512 West Third, Amarillo, Tex.

Filed Jan. 7, 1972, Ser. No. 216,164
Int. Cl. B61k *13/00*
U.S. Cl. 104—245 10 Claims



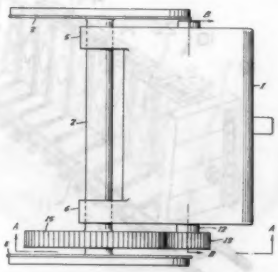
Wheeled cafeteria high chair is operatively connected to a guide assembly which in its operative extended position maintains the high chair in a path uniformly spaced away from a cafeteria serving table and its tray support and arranged to eliminate damaging mechanical shocks otherwise transmitted from an occupied moving child's high chair to the tray support of a cafeteria. In its retracted position the guide assembly does not interfere with the mobility of the high chair.

3,734,029

RESILIENT RAILWAY VEHICLE TRANSMISSION

John Henry Gooch, Goldsmiths, Albourne, Hassocks, Sussex, England

Filed Sept. 9, 1970, Ser. No. 70,854
Claims priority, application Great Britain, Sept. 22, 1969, 46,662/69
Int. Cl. B61c *9/32*, *9/36*, *9/40*
U.S. Cl. 105—131 10 Claims



The invention provides a railway locomotive, a driving wheel of which has its axle propelled by an electric motor positioned with its centre of gravity to one side of the axle said motor being resiliently supported from a frame such as a bogey in which said axle is sprung mounted the drive shaft of said motor being constrained to remain always parallel to said axle and coupled thereto by gearing and with a torsionally flexible driving connection between said shaft and said gearing the arrangement being such that vertical displacement of said axle relative to said frame due to said wheel encountering a track irregularity may occur without linear displacement of the centre of gravity of the motor or rotational displacement of the drive shaft of the rotor of said motor.

3,734,030

PNEUMATIC RAILWAY CAR SUSPENSION

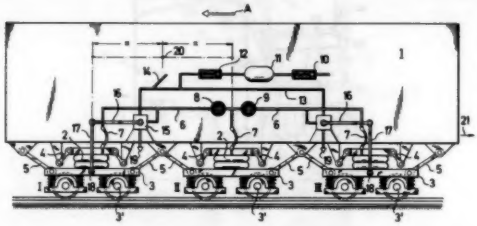
Ernst Florian Kreissig, Seuzach, and Karl Feuerlein, Winterthur, both of Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed May 12, 1971, Ser. No. 142,583

Claims priority, application Switzerland, May 13, 1970, 7080/70

Int. Cl. B61f 3/06, 5/10, 5/50

U.S. Cl. 105—164 7 Claims



The pneumatic springs of the resilient suspensions at each supporting position are interconnected via ducts and stop valves such that, with respect to the direction of travel, the two forward suspensions are coupled together to achieve an equalization of the supporting forces therebetween while the rear suspension remains independent of the coupling. The coupling is reversible by opening and closing of the stop valves when the direction of travel is reversed, so that the two forward suspensions in the reversed direction of travel are coupled together while the rear suspension is independent.

3,734,031

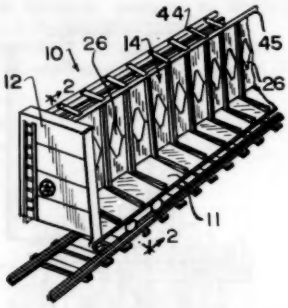
CENTER BEAM RAILROAD CAR

Ross W. Wagner, Homewood, Ill., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed July 19, 1971, Ser. No. 163,899

Int. Cl. B61d 17/00

U.S. Cl. 105—367 17 Claims



Disclosed is an improved open freight carrying railroad car of the center beam type. In addition to a lightweight center sill and side sills, it has cross-bearers supporting the floor and a vertical center beam joined at its bottom to the center sill and extending longitudinally the length of the car between bulkheads at each end of the car. The center beam has a top structure for aiding in transferring compressive forces between the bulkheads, and for storing tie-down gear, having a wide substantially horizontal metal plate chord joined centrally to, and extending the length of, the top of the center beam, and a horizontal structural stiffening member joined to each edge of the wide chord and extending the length of the center beam. The stiffening members project upwardly to define opposing walls of a trough having the wide chord as the bottom. The wide chord and stiffening members resist compressive and lateral forces applied thereto in use of the car.

3,734,032

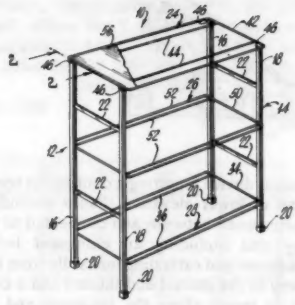
STAND FOR BOOKS AND OTHER ARTICLES

Joseph Kovacik, Ardsley, N.Y., assignor to National Wire Industries, Inc., Bronx, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,404

Int. Cl. A47b 47/02

U.S. Cl. 108—111 3 Claims



A stand having at least two vertical end frames each having a pair of tubular legs with the tubular legs each having at least one opening along its length to receive hook shaped extensions on a lower shelf to be supported between the frames and an upper shelf having means engaging the upper ends of the legs to secure the frames in engagement with the lower shelf and form a rigid structure.

3,734,033

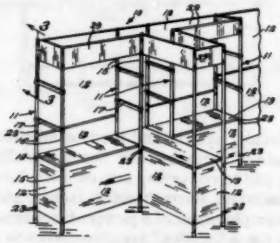
KNOCK-DOWN DISPLAY STRUCTURE

John G. Downing, c/o Downing Displays, 300 Genessee Street, Cincinnati, Ohio

Filed May 6, 1971, Ser. No. 140,862

Int. Cl. A47b 3/00

U.S. Cl. 108—111 3 Claims



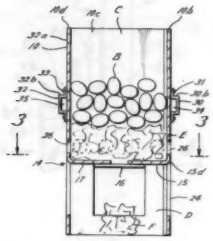
There is disclosed a structure that may be readily set up or disassembled for transportation and which comprises three basic structural pieces interrelated by detachable connector means to form a variety of strong, self-supporting displays.

3,734,034

KINDLING APPARATUS

Oliver E. Fowler, 520 Camellia Drive, Lafayette, La.

Filed Sept. 7, 1971, Ser. No. 176,344
Int. Cl. F23q 13/00
U.S. Cl. 110—1 F 9 Claims



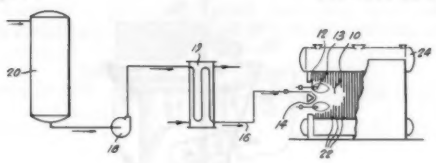
A new and improved apparatus for kindling charcoal with a very small fire including a removable handle for dumping kindled charcoal into a grill or brazier.

3,734,035

METHOD AND A SIMPLE APPARATUS THEREFOR TO EFFICIENTLY DISPOSE OF LIQUID WASTES CONTAINING COMBUSTIBLE CARBONACEOUS MATERIAL

Fred Sparks Whitfield, Napanee, Ontario, Canada, assignor to Millhaven Fibres Limited, Montreal, Quebec, Canada

Filed June 21, 1971, Ser. No. 155,004
Int. Cl. F23g 7/00
U.S. Cl. 110—7 R 10 Claims



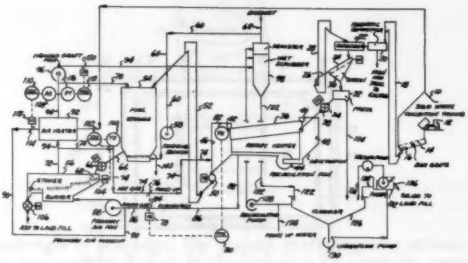
This invention relates to a method and a simple apparatus therefor to efficiently dispose of liquid wastes containing combustible carbonaceous material and water but being substantially free of substances yielding solid residue. This invention is preferably concerned with the disposal of liquid textile wastes. Broadly stated the method comprises: (a) heating at the temperature of its boiling point at atmospheric pressure a liquid waste containing combustible carbonaceous material and water, said liquid being substantially free of substances yielding solid residue. (b) simultaneously pressuring said liquid to maintain it in liquid state; (c) spraying into an open fire said heated liquid waste kept under pressure to flash out the liquid, thereby evaporating the water from said liquid and burning the combustible carbonaceous material. There is also provided a relatively simple incinerator for carrying out this method comprising: (a) an open fire furnace provided with a spraying nozzle, said nozzle spaced in relationship to said open fire, (b) a means to heat and pumping means to feed under pressure into said spraying nozzle a heated liquid waste of carbonaceous material containing water and yielding substantially no solid residue, to evaporate said liquid and to burn said carbonaceous material.

3,734,036

PROCESS FOR DISPOSAL OF COMBUSTIBLE WASTE

Ramon L. Abos, Ypsilanti, Mich., assignor to Hoad Engineers Incorporated, Ypsilanti, Mich.

Filed Mar. 30, 1972, Ser. No. 239,486
Int. Cl. F23g 5/04
U.S. Cl. 110—8 R 15 Claims



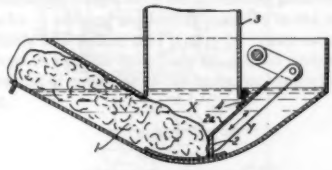
Combustible waste material is collected and processed into fuel after which the fuel is disposed of by incineration, the energy derived from combustion being utilized to convert additional waste material into fuel. Included in the process are the steps of shredding the waste material and passing the shredded material through a heating chamber wherein the waste material is contacted by hot exhaust gases at about 800°F from a combustion chamber to convert the shredded material to a charcoal-like fuel, conveying the fuel to a storage chamber, fluidizing and feeding the fuel to the combustion chamber, and incinerating the same to produce hot exhaust gases of about 1500°F, passing a sufficient portion of the hot exhaust gases to the heating chamber as make-up gases to maintain at about 800°F the temperature of the gases contacting the shredded material, and returning to the combustion chamber from the heating chamber a corresponding portion of discharge gases.

3,734,037

SLAG REMOVAL MECHANISM WITH FLUID SEAL

Johannes Josef Martin, Leopoldstrasse 248, Munich, Germany

Filed July 26, 1971, Ser. No. 165,912
Claims priority, application Germany, Aug. 5, 1970, P 20 38 891.4
Int. Cl. F23j 1/00
U.S. Cl. 110—165 R 7 Claims



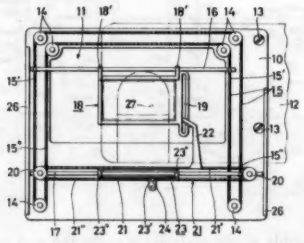
A slag removal mechanism for fire boxes or the like is comprised of a fluid-containing slag receptacle into which a slag-dispensing chute extends through which the slag is deposited in the receptacle. A reciprocable pusher member is disposed in the slag receptacle and extending into the fluid for pushing the slag through the fluid towards the receptacle opening. The open end of the slag-dispensing chute extends into the fluid in the slag receptacle and a sealing arrangement is provided between the open end of the chute and the reciprocating pusher member to prevent admixture of the contaminated fluid portion in which the slag is suspended with the clean fluid portion rearwardly of the pusher member to thereby prevent entrance of dirt into the pusher mechanism.

3,734,038

STITCHING MECHANISM

Bunsaku Taketomi, 56-141 Aza-Ishikane, Oaza-Iwasaki, Nisshin-cho, Aichi-gun, Aichi-ken, Japan

Filed July 22, 1971, Ser. No. 165,206
Claims priority, application Japan, July 31, 1970, 45/67463
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **7 Claims**



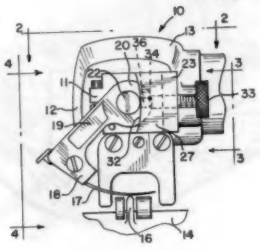
A stitching mechanism mountable on the bed of an ordinary sewing machine in which a stitch frame is actuated two-dimensionally over a base plate having a window by a first endless string stringed doubly on pulleys mounted on said base plate and a second endless string stringed doubly on pulleys disposed so as to move with said first endless string and the movement of a tracing member connected to second endless string is transmitted to said stitch frame as a movement of the same magnitude but in the opposite direction.

3,734,039

BLIND STITCH SEWING MACHINES

Jacob Krasnitz, 1739 W. Addison, Chicago, Ill.; Martin Krasnitz, 8024 Lyons, Chicago, Ill.; Ronald M. Spatzek, 1355 N. Sondbury, Terrace, Chicago, Ill., and Ronald H. Krasnitz, 7759 S. Shore Drive, Niles, Ill.

Filed Aug. 27, 1971, Ser. No. 175,618
Int. Cl. D05b *1/24*
U.S. Cl. 112—176 **4 Claims**



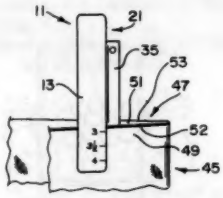
An improvement in blind stitch sewing machines having a needle carrier supporting a curved blind stitch needle oscillatable through an arc to penetrate the work, which arc is closely adjacent other parts of the machine so that replacing or threading of the needle is difficult because of the limited space available. Means are therefore provided whereby the needle carrier is manually releasably carried on its shaft so that when it is necessary to replace or thread the needle it may be manually rotated on its shaft up out of the way of other parts of the machine where such work is easily accomplished.

3,734,040

SEWING GUIDE FOR PIN STRIP

Jack M. Lawson, 3161 Ashwood No. 3, Memphis, Tenn.

Filed Jan. 2, 1971, Ser. No. 194,847
Int. Cl. D05b *35/10*
U.S. Cl. 112—153 **6 Claims**



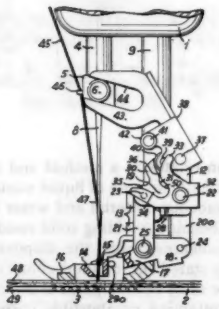
A device for use in the manufacture of the pleated upper section of a drapery panel which guides the inserting and positioning of a pin strip into a folded portion of the drapery heading and which guides the stitching of the pin strip onto the drapery heading. The guide device includes a base portion, upper and lower plate-like elements supported from the base portion and extending therefrom in parallel spaced apart relationship. The guide device further includes a rod also supported from the base portion and extending alongside of the lower platelike element in parallel spaced apart relationship therewith.

3,734,041

SEWING MACHINE PRESSER FOOT

Ramon Casas Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Feb. 19, 1971, Ser. No. 117,004
Claims priority, application Switzerland, Mar. 6, 1970, 3302/70
Int. Cl. D05b *27/04*
U.S. Cl. 112—212 **9 Claims**



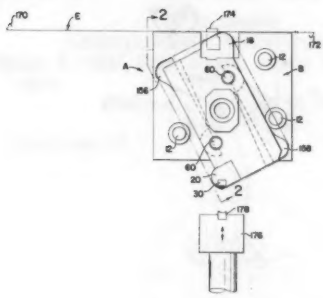
The presser foot has a sole hinged on an intermediate support member which is pivoted on a main support member through a deformable parallelogram of links. The main support has a yoke and screw to clamp the presser foot to the presser bar. A paw may be rigidly fixed to the main support member to hold the fabrics to be sewn when the sole is released. The sole can be drawn in the direction of passage of the fabrics when urged towards the feed dog thereby preventing relative slippage of glossy or binding fabrics. A restoring device is coupled to the needle actuating mechanism to bring the sole back into a neutral position when released.

3,734,042

DOUBLE EXPANSION RECTANGULAR FORMING HORN

Eugene W. Heniser, and Bernard K. Hook, both of Hastings, Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed May 24, 1971, Ser. No. 146,315
Int. Cl. B21d 51/26
U.S. Cl. 113—8 8 Claims



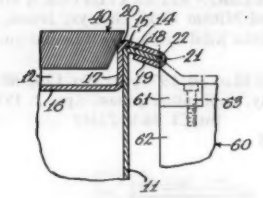
A rectangular forming horn for forming substantially rectangular can bodies includes a pair of diagonally opposite corners which are movable between a collapsed position and an expanded position. Expanding the diagonally opposite corners of the forming horn produces substantially rectangular can bodies with uniform corner radii and parallel sides.

3,734,043

DRUM RECONDITIONING PROCESS

Morris Rosenbloom, Chicago, Ill., assignor to Doric Corporation, Oklahoma City, Okla.

Filed Mar. 1, 1972, Ser. No. 230,800
Int. Cl. B21d 51/38
U.S. Cl. 113—120 BB 10 Claims



A drum reconditioning method including the steps of removing a double seamed closure from a drum body side wall by wedging the closure flange structure to an acute angle with respect to the drum body, rotating the drum and cutting the portion of the closure flange that bridges the drum body flange, removing the closure and treating the interior of the drum body, and double seaming a new closure to the treated drum body.

3,734,044

SEALED CONTAINER ASSEMBLY AND METHOD OF MAKING SAME

Richard W. Asmus, 3628 West 48 Street, and Andrew E. Jecker, 3610 West 49 Street, both of Cleveland, Ohio

Division of Ser. No. 719,301, April 8, 1968, Pat. No. 3,501,045. This application Dec. 22, 1969, Ser. No. 889,767
Int. Cl. B21d 51/00
U.S. Cl. 113—121 C 5 Claims

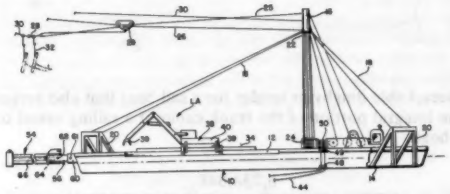
Easily opened sealed container comprising a rigid container body preferably having an opening provided with a beaded edge, a rigid outer cover for the opening, the outer cover being readily releasably mechanically interlocked over the opening, an inner peelable sealing diaphragm equipped with an integral pull-tab engaged between said outer cover and said edge, and a plasticized resinous sealant adhering said diaphragm to said edge. The sealant, preferably of a solventless heat-activated type, is characterized by relatively weak shear strength. The diaphragm is preferably cut from sheet material with areas to be cut from sheet "packed" to provide a quadrilateral "scrap" area from which an integral tab is formed.

3,734,045

LOGGING BARGE

Kenneth C. Foreman, P.O. Box 271, Ketchikan, Alaska

Filed Nov. 12, 1971, Ser. No. 198,170
Int. Cl. B63b 35/02
U.S. Cl. 114—.5 R 7 Claims



A logging barge is provided with a tower securely fastened to the barge by guy lines mounted to stanchions. Suitable rigging brings logs from the logging area to the barge. A grapple is slidably mounted on a track running between two bundling racks. A stiff leg is pivotally coupled to the barge and is also slidably coupled so that it may be drawn onto the barge for storage. A pair of waist lines are passed around blocks at the lower end of each side of the barge for anchoring the barge on shore.

3,734,046

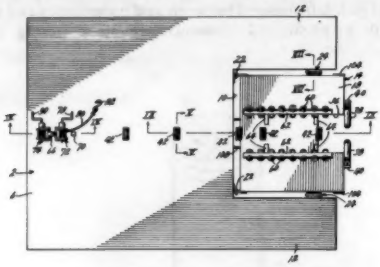
FLOATING DRY DOCK

Otto W. Schmidt, Leawood, and Richard O. Schmidt, Prairie Village, both of Kans., assignors to The Firman L. Carswell Manufacturing Company, Kansas City, Kans.

Filed May 10, 1971, Ser. No. 141,865
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 8 Claims

A floating dry dock consisting of a buoyant platform having a section adapted to be pivoted downwardly to form a ramp extending at its free edge beneath the water level, and up which a boat may be pulled from the water to the platform, the ramp section having sufficient buoyancy to support the boat, or that portion of the boat weight eventually supported thereon, cable mechanism for pivoting the ramp section

downwardly against its natural buoyancy, cable mechanism for pulling a boat upwardly along the ramp section, locks for



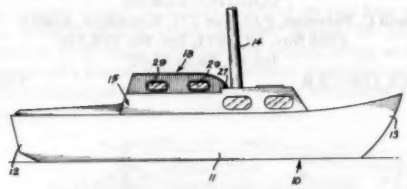
holding the ramp section releasably in its elevated position, and supports on the platform and ramp section for carrying the boat.

3,734,047

DETACHABLE DINGHY OR TENDER FOR SAIL BOATS

James R. Burton, 6923 100th Avenue, Seabrook, Md.

Filed Apr. 28, 1971, Ser. No. 138,036
Int. Cl. B63b *35/00*
U.S. Cl. 114—39 4 Claims



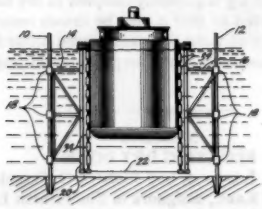
Detachable dinghy or tender for a sail boat that also serves as an integral portion of the trunk cabin of a sailing vessel or sail boat.

3,734,048

AUTOMATIC HULL CLEANING SYSTEM

Randolph C. H. Michaelsen, Malibu, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Oct. 1, 1970, Ser. No. 77,112
Int. Cl. B60s *3/02*
U.S. Cl. 114—222 8 Claims



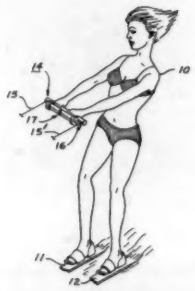
There is described apparatus for scrubbing the sides of a ship in which two pairs of vertical strings of rotary brushes are urged against the opposite sides of the ship as it passes through the apparatus. The rotary brushes in each string are linked by flexible or articulated shafts, permitting the string to deform to conform to the shape of the hull. A combination of weights associated with a pivoted frame supporting the strings of brushes, plus jets associated with the individual brushes, urge the brushes into contact with the sides of the ship.

3,734,049

HANDLE STRUCTURE

Jack M. Humbert, 7412 Cushman Court, Citrus Heights, Orangevale, Calif.

Continuation-in-part of Ser. No. 21,437, March 20, 1970, Pat. No. 3,626,892. This application Dec. 13, 1971, Ser. No. 207,402
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 6 Claims



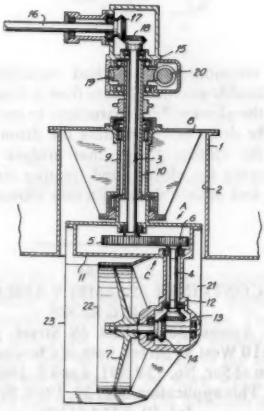
A handle structure attached to the free end of a towline or rope to enable the same to be releasably gripped by one using the same. The handle structure is especially useful for water skiing, and it functions to augment or enhance the natural grip of the skier and to quickly release the grip when necessary. The handle structure may be in the form of a single unit sufficiently large to be gripped by both hands, and includes a handhold component adapted to be gripped by each hand of a skier. A compression member movable with respect to the handhold component and urged theretoward into compressive engagement with the fingers of a hand grips the same whenever a tensile force is applied to the towline. The compression member is segmented and includes independently rotatable sections rollingly engageable, respectively, with the fingers of the opposite hands to permit separate release thereof.

3,734,050

PROPULSION APPARATUS FOR A SHIP

Toshio Kitai, and Mitsuo Kitai, Nagoya, Japan, assignors to Kabushiki Gaisha Kitai Tekkoshyo, Minami-ku, Nagoya-shi, Japan

Filed Mar. 30, 1971, Ser. No. 129,380
Claims priority, application Japan, Apr. 2, 1970, 45/27420
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 8 Claims



A propulsion apparatus for a ship comprises an upper vertical drive shaft rotatable about a vertical central axis in a recess

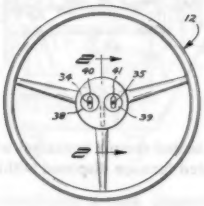
in the bottom of the hull of a ship and a lower vertical drive shaft is drivingly engaged with the upper drive shaft by transmission gears and is angularly turnable around the upper drive shaft to turn therewith a propeller whose horizontal drive shaft is connected to the lower drive shaft through bevel gears. The lower drive shaft and propeller are both turnable about the upper drive shaft as a unit within a region circumscribed by the recess.

3,734,051

VEHICLE WHEEL POSITION INDICATOR

Eileen C. Dahl, 5024 Dupont Avenue South, Minneapolis, Minn.

Filed Aug. 5, 1971, Ser. No. 169,378
Int. Cl. B60q 1/42
U.S. Cl. 116—31 **3 Claims**



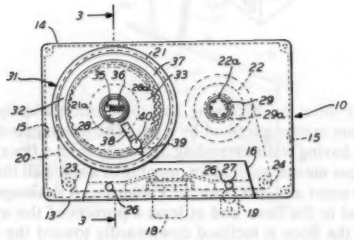
A directional position indicator for the front wheels of a vehicle consisting of a housing mounted on a steering wheel, a pinion gear journaled in said housing, a weighted arm extending radially of said gear and being integral therewith, a pair of gears journaled in said housing in opposed relation at either side of said pinion gear and said pair of gears respectively bearing indicia visible through said housing indicating the directional position of the front wheels of said vehicle.

3,734,052

CASSETTE WITH INDEX MECHANISM FOR MAGNETIC TAPE DICTATING MACHINE

Edward Feldman, Teaneck, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed May 31, 1972, Ser. No. 258,311
Int. Cl. G01d 21/00
U.S. Cl. 116—114 **7 Claims**



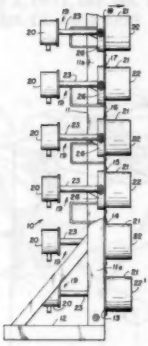
A cassette for a magnetic tape dictating machine is provided with an index mechanism as a part thereof. The index mechanism comprises an index member bearing indicia and mounted concentric with the drive-spindle opening for one of the reels, preferably the supply reel, and a cooperating index pointer. Through a planocentric reducer coupled to the supply reel hub a movement of approximately one revolution is obtained between the index member and pointer responsive to a transfer of a full length of tape from one reel to the other.

3,734,053

SOUND SIGNALING SYSTEM HAVING ADJUSTABLE HORIZONTAL DIRECTIVITY

Robert J. Dodge, Houston, Tex., assignor to Automatic Power Division, Pennwalt Corporation, Houston, Tex.

Filed Mar. 15, 1971, Ser. No. 124,033
Int. Cl. B06b 3/00
U.S. Cl. 116—137 **3 Claims**



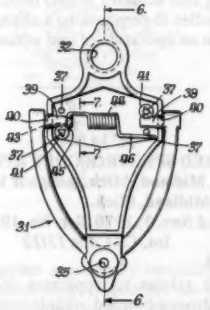
A sound signaling system is disclosed which includes a vertical frame having a plurality of sound baffles mounted on the frame in vertical alignment, and a plurality of sound transmitters each mounted on one of said baffles to form a vertical array of sound transmitters. Each of the sound transmitters is mounted on its respective baffle by a mounting means which permits the mouth of the sound generator to be adjusted with respect to the baffle from a first position in which the vertical array emits sound signals in a relatively narrow horizontal pattern to a second position in which the array emits such signals in a relatively broader horizontal pattern.

3,734,054

MODERN DOOR KNOCKER

William J. Anderson, Taylorsville, Miss., assignor to Solar Hardware Corporation, Taylorsville, Mich.

Filed Dec. 8, 1971, Ser. No. 205,897
Int. Cl. G10k 1/34
U.S. Cl. 116—148 **3 Claims**

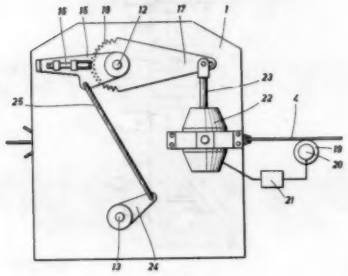


The hammer of a door knocker is biased outwardly from the mounting plate to facilitate the act of using the knocker.

3,734,055
APPARATUS FOR OILING CONTINUOUSLY MOVING STOCK

Stefan Glanzer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Sept. 28, 1971, Ser. No. 184,490
Claims priority, application Austria, Oct. 20, 1970, A 9427/70
Int. Cl. B05c 5/00, 11/16
U.S. Cl. 118—8 9 Claims



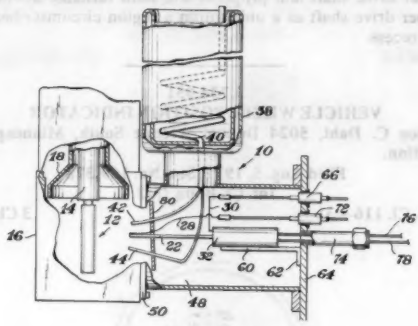
Chamber-defining means define a closed chamber, a sealing inlet to and a sealing outlet from said chamber. Stock-feeding means are provided for continuously moving stock to be oiled through said inlet, chamber, and outlet along a predetermined path. A row of nozzles open in said chamber and are spaced apart transversely to said path and directed toward said path and operable to discharge an oil-air mixture toward said path. Each of said nozzles comprises a needle, which is displaceable to vary the rate at which said oil-air mixture is discharged from said nozzle. An oil conduit and a compressed-air conduit are connected to said nozzles. An automatic control system is provided to control the rate at which said oil-air mixture is discharged from said nozzles in proportion to the speed of travel of said stock in said chamber. Said control system comprises a sensing roller engageable with said stock and adapted to be driven thereby at a speed which is proportional to said speed of travel, a tachogenerator arranged to be driven by said sensing roller and to produce an output signal representative of said speed of travel, an actuator, a controller arranged to receive said output signal and to control the operation of said actuator in response to said output signal, and a linkage operatively connecting said actuator to said needles and arranged to displace said needles in response to a change of said speed of travel resulting in an operation of said actuator.

3,734,056
INFRARED SPECTROSCOPY APPARATUS

Stanley T. King, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1970, Ser. No. 195,439
Int. Cl. C23c 13/12
U.S. Cl. 118—48 6 Claims

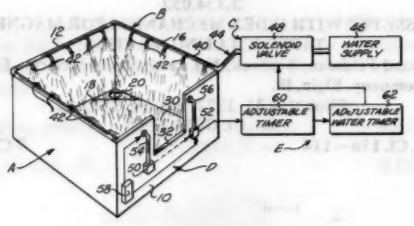
This invention relates to apparatus for use in isolating monomers of hydrogen-bonded organic compounds, liquids or solids at room temperature in a low temperature inert gas matrix. The apparatus comprises a refrigerated section having an infrared window, a second refrigerated section for precooling the inert matrix gas and for receiving vaporized material to be deposited on the infrared window, the second section having matrix gas nozzles adjacent to a resistance heated sample inserting nozzle entering the second section from an adjacent sample heating and valving section. The nozzle is coupled to a sealed sample container which is inserted in an electrically heated furnace disposed within the second section.



3,734,057
PET TOILET

Gary Lee, 1850 Aldersgate Drive, Lyndhurst, Ohio, and Carl Tucker, 4041 Hinsdale Road, South Euclid, Ohio

Filed Sept. 1, 1971, Ser. No. 177,056
Int. Cl. A01k 29/00
U.S. Cl. 119—1 8 Claims



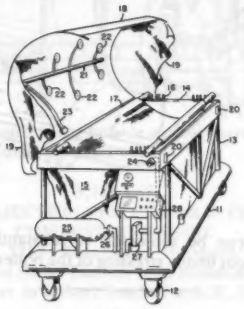
A pet toilet for receiving and then automatically flushing therefrom matter excreted by a pet. The toilet includes an enclosure having walls extending upwardly from a floor and having access means, such as an opening in a sidewall thereof, for a pet to enter and exit from the enclosure. A drainage outlet is provided in the floor and at least a portion of the upper surface of the floor is inclined downwardly toward the outlet. A flush system serves to spray water into the enclosure so that matter excreted therein by a pet is washed from the walls and floor of the enclosure so as to exit through the outlet. Water is supplied to the flush system from a suitable water source when a water supply valve is actuated. A photoelectric system serves to detect a pet entering the enclosure through the access thereto, and an electrical control responds to the photoelectric system for actuating the valve. The control circuit and photoelectric system are arranged so that the enclosure is flushed after the pet has exited. A water timer is provided for controlling the time duration that water is sprayed into the enclosure.

3,734,058

TRANSPORTER FOR STRETCHER BORNE ANIMALS

John D. Hightower, Kailua; Martin E. Conboy, Kanfohe, and Lawrence Phillips, Kailua, all of Hawaii, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 1, 1971, Ser. No. 176,955
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 6 Claims



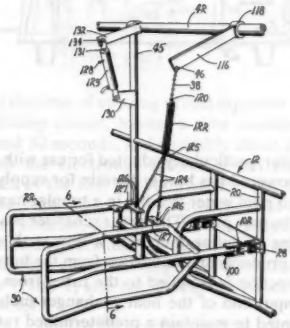
A transporter comprising a tank containing a supply of fluid, a frame mounted on the tank and extending thereabove, stretcher supporting devices on the frame, and a canopy extending over it. A fluid distribution system is disclosed connected to the tank and is arranged to discharge its contents above a stretcher supported on the frame. An open fluid receiving receptacle is disclosed as extending below the stretcher and attached to the frame.

3,734,059

RESTRAINING DEVICE FOR QUADRUPEDS

Antonio Rodrigues, 8302 18th Avenue, Lemoore, Calif.

Filed Mar. 4, 1971, Ser. No. 120,968
Int. Cl. A01j *01/00*; A01k *01/00*
U.S. Cl. 119—27 11 Claims



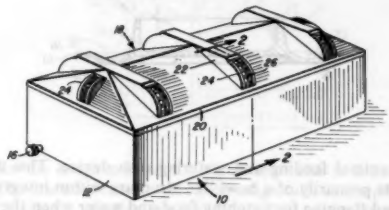
A restraining device for confining quadrupeds, particularly suited for use in restraining unruly animals, such as ill-tempered cows and the like, for various handling purposes, including facilitating milking operations. The device is characterized by a plurality of pairs of generally parallel restraining rails pivotally coupled to a manger of a type including a plurality of yokes for simultaneously receiving the heads of a plurality of animals to be restrained, and an actuator coupled therewith for imparting thereto a lifting force, whereby a simultaneous, pivotal repositioning of the rails between angularly spaced positions readily is accommodated for receiving and restraining the animals. The rails are mounted on the device to permit their substantially vertical oscillation about a horizontal axis, as well as their substantially horizontal oscillation about a vertical axis, whereby the rails pivot in orthogonally related planes.

3,734,060

LIQUID SUPPLEMENT LIVESTOCK FEEDER

Roland B. Collison, 102 - 19th Drive, Norfolk, Nebr.

Filed May 3, 1971, Ser. No. 139,438
Int. Cl. A01k *5/00*
U.S. Cl. 119—51 R 10 Claims



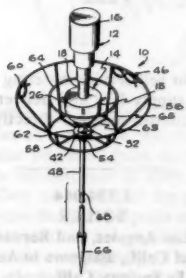
A liquid supplement feeder for livestock, and the like, said feeder having a plurality of licking chain assemblies, each assembly including a continuous multi-link chain, the lower portion of which dips into a tank or container of liquid supplement, and the top portion of which is slidably supported by a smoothly curved fiber glass channel where it is exposed to the livestock which lick the chain to derive liquid supplement therefrom. The licking action of the livestock places sufficient forces on the chain to advance it into the liquid supplement, thereby constantly replenishing the supplement which clings to the chain to provide a continuous supply of liquid supplement to the livestock.

3,734,061

BIRD FEEDING DEVICE

Dixie Valentine Kraus, 25000 Hawkbryn Avenue, Space 44, Newhall, Calif.

Filed Jan. 24, 1972, Ser. No. 220,331
Int. Cl. A01k *5/00*
U.S. Cl. 119—52 R 7 Claims



The device comprises a generally vertically oriented feed dispenser, an elongated support member for the dispenser, a releasable connector interconnecting the support member and the dispenser, and a bird perch assembly encircling the feed dispenser.

The perch assembly includes a generally inverted frustroconical basket secured to the elongated support member and an inner ring supported within the basket at about the level of the dispenser. The releasable connector may include a

ball secured to the bottom of the basket and spring blades secured to the bottom of the dispenser which can releasably engage the ball.

3,734,062

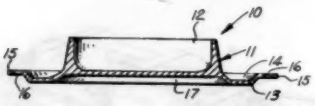
NON-SPILLING DISH FOR DOGS AND THE LIKE

Jamie O'Hara, 3306 Deer Creek, San Antonio, Tex.

Filed Jan. 28, 1972, Ser. No. 221,546

Int. Cl. A01k *05/00*

U.S. Cl. 119—61 **2 Claims**



An animal feeding and watering dish device. This device consists primarily of a bowl like structure within integral and recessed flanging for catching food and water when the pet is being fed.

3,734,063

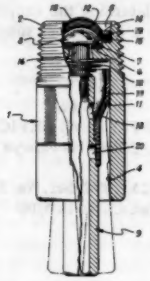
DEMAND DELIVERY WATERING VALVE FOR ANIMALS

Frank W. Atchley, 461 Walnut St., Napa, Calif.

Filed Aug. 3, 1971, Ser. No. 119,103

Int. Cl. A01k *07/00*

U.S. Cl. 119—72.5 **14 Claims**



A valve device for self-service watering of animals that attaches to a water supply line and delivers water through a pivotable, hollow control member directly into the animal's mouth.

3,734,064

BOILER

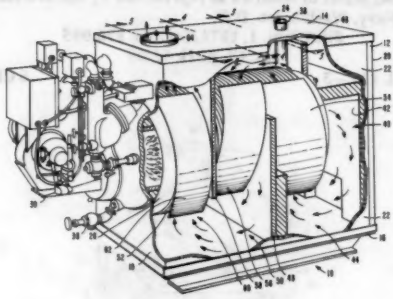
Edward Cancilla, Los Angeles, and Bernard E. McClanahan, La Habra, both of Calif., assignors to Ace Tank and Heater Company, Santa Fe Springs, Calif.

Filed Aug. 16, 1971, Ser. No. 172,048

Int. Cl. F22b *7/00*

U.S. Cl. 122—136 R **20 Claims**

A boiler is disclosed in which hot flue gases generated by combustion within a furnace tube mounted in a liquid filled boiler drum are directed back and forth over different portions of the outside of the drum by an arrangement of partitions and baffles located within a housing containing the boiler drum. The resulting multi-pass design provides for substantially uniformly high flue gas velocity over a plurality of fins helically disposed along the length of the boiler drum on the outside thereof, resulting in effective extraction of heat from the flue gases and high boiler efficiency. The helically



disposed fins can be subjected to substantial temperature variations without undue stressing of the boiler drum.

3,734,065

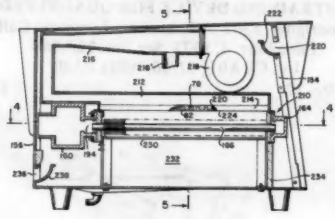
FLUID HEATER

Edward A. Reid, Jr., and Robert G. Venendaal, both of Columbus, Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 7,445, Feb. 2, 1970, Pat. No. 3,630,175. This application Dec. 27, 1971, Ser. No. 212,517

Int. Cl. F22b *21/26*

U.S. Cl. 122—250 R **17 Claims**



A fluid heater, particularly adapted for use with a swimming pool, has a powered gas burner therein for supplying high intensity heat to pool water flowing in a tubular heat exchanger adjacent the burner plate. The heat exchanger is arranged in a heater housing to define therewith a flow path adjacent the tubes for the products of combustion from the burner whereby heat by convection is supplied to the tubes from the exhaust gases. The input end of the heat exchanger includes a valve member adapted to maintain a predetermined rate of flow of water through the tubes and to bypass excess water back to the pool.

3,734,066

THERMAL FLUID BOILER

Marcel Scheyen, 26, Avenue de la Paix, Strasbourg, France

Filed July 1, 1971, Ser. No. 158,971

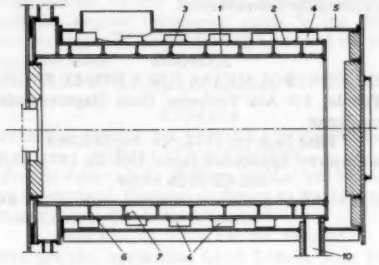
Claims priority, application France, July 1, 1970, 7024309

Int. Cl. F22b *23/06*

U.S. Cl. 122—367 R **2 Claims**

A thermal fluid boiler has a heating chamber consisting of two concentric walls. The inner wall has baffles secured

thereto in the shape between the inner and outer walls but such baffles are not in contact with the outer wall. The outer



wall has fins secured to the outside surface thereof and an outside jacket surrounds the outer wall.

3,734,067

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

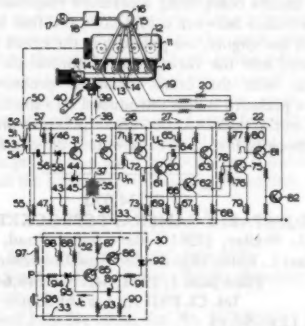
Otto Glockler, 7253 Renningen; Hermann Schmid, 732 Goppingen, and Dieter Eichler, 7026 Bonlanden, all of , Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 17, 1970, Ser. No. 99,139

Claims priority, application Germany, Jan. 22, 1970, P 20 02 667.9

Int. Cl. F02m *51/00*; F02b *3/00*

U.S. Cl. 123—32 EA **11 Claims**



To extend the time of opening of fuel injection valves during starting, a timing circuit, having a time constant preferably between 5 and 30 seconds, and desirably about 25 seconds, is connected to the electronic control circuit controlling the opening times of the fuel injection valves. The timing circuit provides a decreasing signal to extend the time during which the injection valves are open from the time the starter switch is operated. Preferably, the fuel injection system includes a pulse duration multiplier circuit, having a multiplication factor varying between 1 and 5, and the timing circuit affects the multiplication factor.

3,734,068

FUEL INJECTION CONTROL SYSTEM

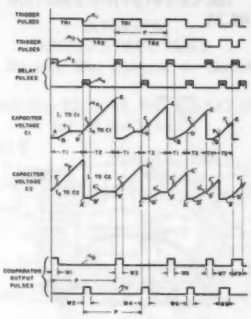
Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1970, Ser. No. 101,896

Int. Cl. F02d *5/00*; F02m *51/00*

U.S. Cl. 123—32 EA **20 Claims**

An internal combustion engine fuel injection control system of the type having one or more electrically controlled fuel injector valves which are opened and closed as a function of rotation of each revolution of the crank shaft and/or the pressure in the engine intake manifold so that the open time of the fuel injector valves changes with variations in the speed of the crank shaft even if the pressure in the engine intake manifold remains constant. This is accomplished by a control circuit that produces a periodic signal having periods and signal durations which are dependent upon the time required for the crank shaft to complete one revolution. Each signal generated during a revolution of the crank shaft includes a portion



wherein the magnitude of the signal increases at a constant rate. The constant rate at which the magnitude of the periodic signal increases remains the same regardless of the changes in the duration of the periodic signal.

3,734,069

SYSTEM FOR PURIFYING THE EXHAUST GAS OF A TWO-CYCLE GASOLINE INJECTION ENGINE

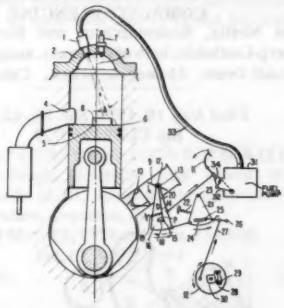
Yoshio Akiyama; Tadanori Sato, and Shinobu Koyama, all of Tokyo, Japan, assignors to Fuji Heavy Industry Co., Ltd., Tokyo-to, Japan

Filed Nov. 16, 1970, Ser. No. 89,729

Claims priority, application Japan, Nov. 14, 1969, 44/91253

Int. Cl. F02p *5/04*

U.S. Cl. 123—32 SP **2 Claims**



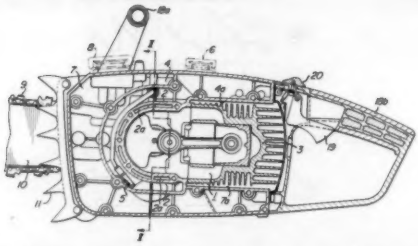
A system for purifying an exhaust gas of two-cycle gasoline injection engine has an automatic injection nozzle disposed relative to a cylinder displaced from the central axis of the cylinder toward the exhaust port to eject the gasoline in the direction intermediate the center of the piston crown when disposed at the bottom dead center point and the cylinder wall opposite the exhaust port and also against the scavenging gas stream flowing from the scavenging port to the cylinder head. The spray angle is selected in the range of 15° to 60°. The end of stationary injection timing is selected in the range from the bottom dead center to 30° after the bottom dead center, and its injection duration held to less than 1.5 millisecond. An injection pump completely shuts off the fuel during high speed - no load operations, and the throttle valve, accelerator pedal and ignition timing means are interlocked so that the throttle valve may not close less than a predetermined opening upon light load operation to maintain the idle speed of the engine. Its ignition timing is changed in response to the opening of the accelerator less than the predetermined opening in order to reduce the concentration of exhaust hydrocarbon and carbon monoxide.

3,734,070

ENGINE BODY CONSTRUCTION OF A CHAIN SAW

Torao Kobayashi, Tokyo, and Hiromasa Miyata, Mitaka, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Sept. 24, 1971, Ser. No. 183,346
Int. Cl. F01p 1/06; F02f 7/00
U.S. Cl. 123—41.31 1 Claim



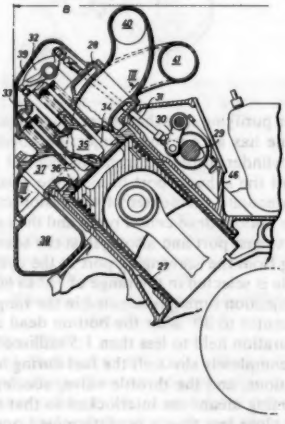
In the construction of an engine body of a portable chain saw, a crank case, fuel tank and a lubricating oil tank are made integral. At least a part of the outside of the crank case is surrounded by the lubricating oil tank, and at least a part of the circumference of the latter is surrounded by the fuel tank. A partition wall between the crank case and the lubricating oil tank is provided with a double wall construction having therein a space which opens at either one or both sides thereof, whereby cooling air may be drawn through the inside of the space.

3,734,071

V-TYPE RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINE

Hermann Mettig, Rodenkirchen, and Bernhard Medenus, Bensberg-Lustheide, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Aug. 10, 1970, Ser. No. 62,560
Int. Cl. F02b 75/22
U.S. Cl. 123—55 V 4 Claims



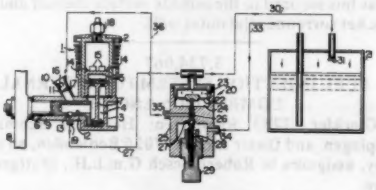
A V-type reciprocating piston internal combustion engine with valves in the cylinder heads, especially a supercharged engine, having exhaust and air supply conduits and valve actuating devices all located within the lateral limits of the engine as determined by the outer limits of the cylinder heads and the rods of the valves therein.

3,734,072

FUEL CONTROL MEANS FOR A MODEL ENGINE

Shoji Yamda, 1-3 Aza Toriyaba, Oaza Haguroshinden, Inuyama, Japan

Filed June 16, 1972, Ser. No. 263,460
Claims priority, application Japan, Oct. 20, 1971, 46/96879
Int. Cl. F02b 33/04
U.S. Cl. 123—73 A 4 Claims



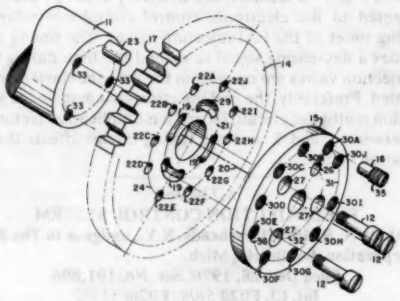
Fuel control means for a model engine in which intake air is pre-compressed in a crank chamber of the engine, said fuel control means comprising a pressure responsive fuel control valve provided between a fuel tank and fuel injection nozzle means of the engine, the pressure in the crank chamber being introduced into the valve so as to control its opening in accordance with the crank chamber pressure. The crank chamber pressure is also introduced into the fuel tank so that the fuel in the tank is forced under pressure through the pressure responsive fuel control valve into the engine.

3,734,073

ADJUSTABLE CAMSHAFT SPROCKET WHEEL

Robert L. Walter, 19361 Lake Chabot Road, Castro Valley, and Earl L. Kelly, 1826 Buena Vista, Livermore, both of Calif.

Filed June 1, 1971, Ser. No. 148,648
Int. Cl. F01l 1/34; F16h 35/06
U.S. Cl. 123—90.15 6 Claims



A timing sprocket for a camshaft is provided with a number of positioning holes equally spaced in a circle about its axis of rotation. A vernier plate connected to the camshaft is provided with alignment holes equally spaced in a corresponding

circle as the circle of positioning holes but at a slightly greater or lesser angle. Alignment of a positioning hole and an alignment hole using a positioning pin permits incremental rotational adjustment of the sprocket wheel relative to the camshaft for angular increments equal to the difference between the angles of the positioning holes and the angles of the alignment holes.

3,734,074

OPPOSED PISTON TWO-STROKE CYCLE INTERNAL COMBUSTION ENGINES

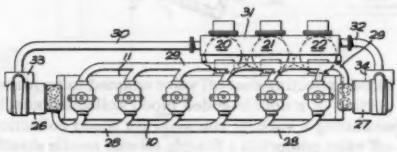
John Francis Butler; John William Jordan, and Finn Orbeck, all of Sunderland, England, assignors to Doxford and Sunderland Limited, Sunderland, England

Filed June 18, 1971, Ser. No. 154,503

Claims priority, application Great Britain, June 19, 1970, 29,951/70

Int. Cl. F02b *37/04*; **F02d** *39/04*

U.S. Cl. 123—119 CB **3 Claims**



A multi-cylinder, opposed piston, two-stroke cycle internal combustion engine, of the kind in which air is admitted to the cylinders under pressure through ports in the cylinder walls at or near the lower ends thereof (i.e. the ends nearest the crankshaft), and exhausted through ports in the cylinder walls at the other ends of the cylinders, has two exhaust driven turbochargers. The gases are exhausted from each cylinder through two sets of ports, the one set of ports for each cylinder being linked to one turbocharger and the other sets to the other turbocharger, so that each turbocharger is driven by approximately half the exhaust gases leaving the engine.

3,734,075

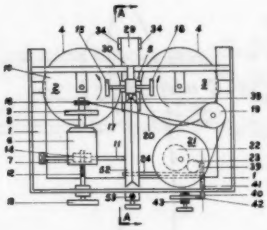
BALL PROJECTING DEVICE

Philip Arthur Staples, 334 Delorme Road, Mondeor, Johannesburg, South Africa

Filed July 30, 1971, Ser. No. 167,604

Int. Cl. F41b *15/00*

U.S. Cl. 124—1 **7 Claims**



The invention relates to a ball projecting arrangement wherein the balls may be projected from between the adjacent portions of the peripheries of a pair of wheels located in the same plane and driven to rotate in opposite directions. The adjacent portions of the peripheries of the wheels are spaced apart less than the diameter of a ball to be projected and the arrangement includes a variable speed ball feed supply mechanism and a variably positioned and movable deflector plate located between and in front of the wheels relative to the direction in which the wheels are adapted to rotate. The positioning of the deflector plate is controlled by a set of rotating cams.

3,734,076

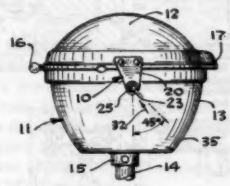
HINGE STRUCTURE

Walter Kiziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 12, 1971, Ser. No. 142,490

Int. Cl. A47j *36/00*

U.S. Cl. 126—25 R **8 Claims**



A hinge structure for a round cover member adapted to be utilized on a rounded base member in a manner such that the cover can be nested partially around the base and removed from the base only when the cover is in a substantially open position. The flange, forming part of the hinge, has an open slot disposed at a pre-determined angle and rests on a post member which is disposed on each side of the base and off-center to serve the dual function of positive opening and closing of the cover with retention of the cover through the inability of the flange to pass over the extended sidewall of the rounded base.

3,734,077

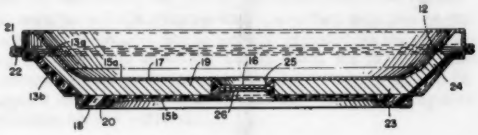
HEAT-RETAINING FOOD SERVER

Charles P. Murdough, Evanston, and Alfred W. Neely, Northbrook, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 15, 1972, Ser. No. 234,945

Int. Cl. A47g *23/04*

U.S. Cl. 126—246 **10 Claims**



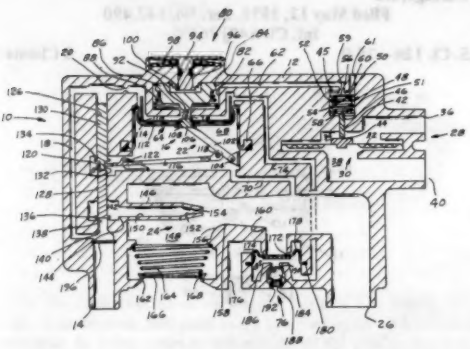
A hollow food serving dish having upper and lower metal shells with a heat-retaining pellet and a resilient cushioning element disposed therebetween. The shells are generally rectangular in shape, when viewed in elevation, and are hermetically sealed together only at their peripheral edges. Limited expansion is permitted upon heating, but the danger of bursting is avoided by reason of the configuration and construction of the dish.

3,734,078

MEANS FOR ANTICIPATING ANTI-G FORCE IN A MOVING VEHICLE

Robert L. Cramer; John W. Henneman, and William P. Myers, all of Davenport, Iowa, assignors to The Bendix Corporation, South Bend, Ind.

Filed May 12, 1971, Ser. No. 142,650
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 A **17 Claims**



An anti-G valve with a pressure sensitive wall member which compares ambient pressure with ram pressure to anticipate a condition from which high onset of "g" could occur and transmits an operational signal. The transmitted operational signal controls the flow of a first fluid under pressure to unbalance a valve permitting the first fluid to flow through a nozzle into a chamber. The static pressure adjacent the nozzle outlet being lower than ambient pressure causes ambient air to enter the chamber. The first fluid and ambient air together pressurize an anti-G garment to protect a recipient from any adverse effects caused by an increase in the acceleration force.

3,734,079

APPARATUS FOR BLOOD TESTS

Mark Weber, 11a King St., Southernwood, East London, South Africa

Filed Apr. 5, 1971, Ser. No. 130,907
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 G **10 Claims**

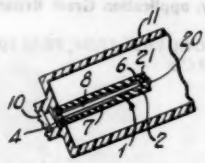
Erythrocyte sedimentation rate measuring apparatus in the form of a hypodermic syringe, the cylinder of which is made to conform to the specification of a Wintrobe sedimentation rate tube, the syringe being preferably of a disposable nature and having a valve means including an agitator ball and anticoagulant in the interior thereof.

3,734,080

BLOOD COLLECTING SHUT-OFF VALVE

Dewitt R. Petterson; John S. Assenza, both of Basking Ridge, and Henry A. W. Kipp, Somerville, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 832,567, June 12, 1969, abandoned. This application Oct. 16, 1970, Ser. No. 81,352
Int. Cl. A61b *19/00*; A61m *1/00*
U.S. Cl. 128—2 F **14 Claims**



A blood collecting shut-off valve adapted to be placed over that portion of a double-ended blood collecting needle used for puncturing a vacuum container for blood collection. The shut-off valve comprises a flexible tubular needle sheath unattached to the needle hub, having a closed pierceable end adjacent to the needle point and needle contacting means on the inner surface of the sheath adjacent to the point of the needle and pressing against the needle cannula to serve as a seal against the passage of blood toward the open end of the sheath and to maintain the sheath on the needle surface. The sheath is composed of a material having the ability to distort under compression when the pierceable end of the sheath and the stopper of the vacuum container are pierced by the point of the needle and the needle cannula enters the vacuum container, with the sheath returning to its original position covering and sealing off the needle point after removal of the vacuum container from the needle.

3,734,081

TOOTH SENSITIVITY TESTING METHOD

Harding Van Schaack, 2460 Pasadena Blvd., Milwaukee, Wis.

Continuation-in-part of Ser. No. 812,834, April 2, 1969,. This application May 3, 1971, Ser. No. 139,420
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 N **10 Claims**

Bead-like spherical bodies of differing sizes and yieldability and heat conductivity are slidable through limited ranges,

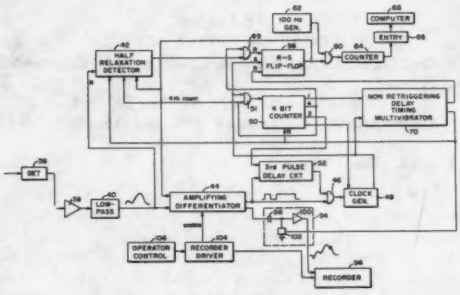
spaced from each other on a highly flexible moisture-impervious strand for selective manipulation to registry with a selected tooth area for localizing sensitivity to temperature or pressure.

3,734,082

SIGNAL PROCESSING SYSTEM FOR ACHILLES TENDON REFLEX TESTING

Edward B. Rawson, Lincoln, and David J. O'Riorden, Jr., Billerica, both of Mass., assignors to Searle Medidata, Inc., Waltham, Mass.

Filed Mar. 24, 1971, Ser. No. 127,555
Int. Cl. A61b 5/16
U.S. Cl. 128—2 N **14 Claims**



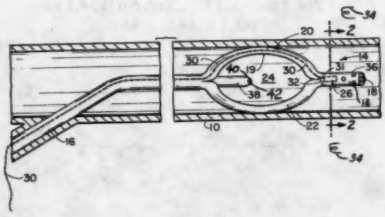
A signal processing system for Achilles tendon reflex testing operative to determine the elapsed time between a hammer tap and the one half relaxation point for both normal and abnormal Achilles tendon reflexes. The test operator is provided with a visual indication of foot motion which is marked to indicate the points of tap initiation and one half relaxation. A digital count is provided corresponding to each one half relaxation time and means are provided to enable entry of this data into a data processor by the test operator when a proper Achilles response has been noted.

3,734,083

ELECTROMAGNETIC CATHETER VELOMETER - FLOW METER

Alexander Kolin, Bel Air, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Sept. 22, 1970, Ser. No. 74,436
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F **12 Claims**



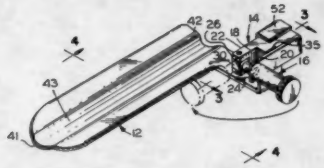
A catheter is provided in the form of an open ended flexible tube, the tube having an intermediate slitted portion. Each of the two sections of the tube adjacent the slitted portion is shaped outwardly into an arched configuration. A pair of electrodes are mounted in the interior of the portion of the tube between the slitted portion and the open end. A slidable plunger may be mounted in the tube, and which can be moved into position to prevent fluid flow through the tube.

3,734,084

MECHANICAL TONGUE DEPRESSOR

Douglas K. Ousterhout, 3321 Thomas Drive, Palo Alto, Calif.

Filed Oct. 28, 1970, Ser. No. 84,776
Int. Cl. A61b 1/24
U.S. Cl. 128—15 **10 Claims**



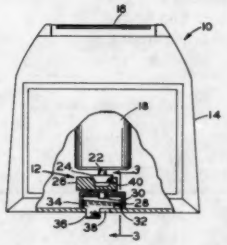
A mechanical tongue depressor has a laterally offset clamp which enables it to be readily clamped to any portion of the vertical post of a conventional mouth speculum wherein the vertical post extends between the upper and lower jaws of the mouth alongside the mouth cavity. Interchangeable depressor blades of different sizes can be quickly attached to and detached from the clamp portion to adapt the depressor for use with animals of different sizes.

3,734,085

STIMULATOR

Theodore B. Russell, 2190 N.E. 124th St., North Miami, Fla.

Filed July 30, 1971, Ser. No. 167,642
Int. Cl. A61h 1/00
U.S. Cl. 128—36 **4 Claims**



An improvement which converts an electric shaver into a stimulator for producing vibrations to stimulate the skin of the user. An oscillating member is provided in a portion of the shaver housing together with means for coupling the oscillating member to the motor of the shaver for driving the oscillating member to produce vibrations of an external shaver surface for stimulating the skin. In one embodiment the oscillating member is a vibrating bar having a surface available on the outside of the shaver, and in another embodiment the oscillating member is an eccentric weight inside the shaver which vibrates the shaver housing so that the housing itself can be applied to the skin to stimulate it. The vibrations may also stimulate muscle and flesh.

3,734,086

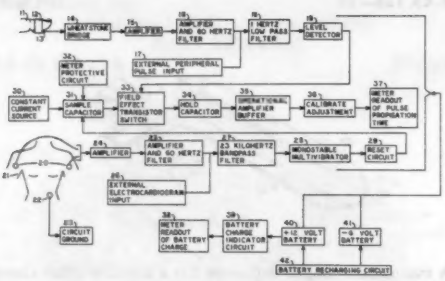
EQUIPMENT FOR MEASURING AND DISPLAYING THE TIME LAPSE BETWEEN A GIVEN HEARTBEAT AND THE CORRESPONDING ARTERIAL PULSE

Jerry Allan Phelps, Sr., 6013 Innes Trace Road, Louisville, Ky.

Filed Mar. 24, 1971, Ser. No. 127,573
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 R **1 Claim**

An apparatus for measuring the time interval between a heartbeat detected by an electrocardiographic detecting

system and the corresponding peripheral pulse detected by a pulse sensing system is disclosed. Further features include a battery supply with a charging circuit and battery condition indicating means and a capacitor-type sample and hold circuit with constant current charging means and meter readout calibrated in pulse propagation time.

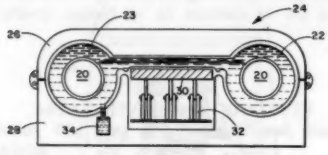


3,734,087

EXTERNAL PRESSURE CIRCULATORY ASSIST

Harold S. Sauer, Carlisle; Nubar D. Hagopian, Bedford, and John M. Colman, Lexington, all of Mass., assignors to Medical Innovations, Inc., Waltham, Mass.

Filed Nov. 11, 1971, Ser. No. 197,824
Int. Cl. A61h 7/00
U.S. Cl. 128—64 **43 Claims**



Improved external pressure circulatory assist device of the type which utilizes an electrocardiogram signal to facilitate synchronization of its pressure pulse with the heartbeat. The improvements include a more efficient and clinically suitable mechanical means to induce pressure variations in the legs of a patient, and an automatic control means to maintain the proper pressurization even during physiological changes in the limbs of the patient being treated, and control means to monitor and adjust the pressure wave to achieve the proper phasing of the pressure wave with the cardiac cycle during treatment of the patient.

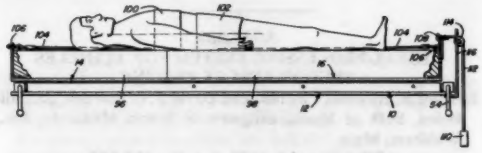
3,734,088

TRACTION SYSTEM HAVING INTERFITTING TONGUE AND NOTCH TRACTION PANELS

Atlee Dee Tucker, Jr., 1339 East Coolidge, and Milton C. David, 1405 Ardmore Ave., both of Modesto, Calif.

Filed Mar. 15, 1971, Ser. No. 124,269
Int. Cl. A61h 1/02
U.S. Cl. 128—75 **5 Claims**

An elongated base mounting an aligned elevator and traction panel. The elevator is hinged to the base and operating components are mounted on the base for selectively vertically pivoting the elevator. The traction panel is mounted for longitudinal movement on the base and the base incorporates operating components for effecting the longitudinal movement of the traction panel. The elevator and traction panel



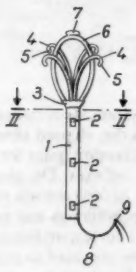
mount patient engaging harnesses in a manner whereby longitudinal movement of the traction panel applies traction to the patient.

3,734,089

CONTRACEPTIVE DEVICE

Robert Gaud, 65 Boulevard du Chateau, 92 Neuilly-sur-Seine, France

Filed Dec. 14, 1971, Ser. No. 207,768
Claims priority, application France, Dec. 15, 1970, 7045235
Int. Cl. A61f 5/46
U.S. Cl. 128—130 **6 Claims**



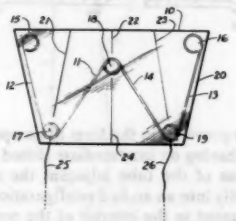
The present invention relates to a contraceptive device to be placed both in the uterine cavity and in the uterine neck and comprising on the one hand a hollow cylinder provided with one or more windows on its side wall and with a widening at its upper part and, housed in said tube by one of their ends, on the one hand two curved stems and a stem folded back on itself forming a loop, the summit of the loop being provided with an excrescence.

3,734,090

INTRA-UTERINE CONTRACEPTIVE DEVICES

Frank Shubeck, 10 Lundy Lane, Larchmont, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,162
Int. Cl. A61f 5/46
U.S. Cl. 128—130 **17 Claims**



An improvement in linear, compressible, uniplanar intrauterine devices which comprises sealing the device in fixed

position between two layers of plastic membrane and then slitting the membrane to allow compression of the device, and, in particular, a W-shaped wire frame sealed in said slitted membrane.

3,734,091

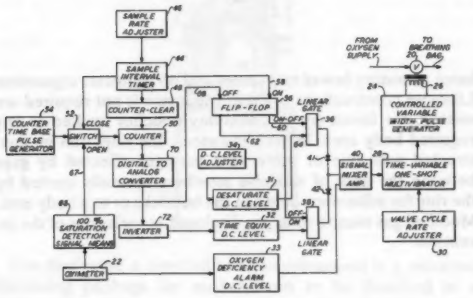
OXYGEN CONTROL SYSTEM WITH BLOOD OXYGEN SATURATION SENSING MEANS AND METHOD FOR CLOSED SYSTEM BREATHING

Ronald H. Taplin, Shirley, England, assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 65,268, Aug. 19, 1970, abandoned, which is a continuation of Ser. No. 708,054, Feb. 26, 1968, abandoned. This application June 22, 1971, Ser. No. 155,547

Int. Cl. A61b *5/00*

U.S. Cl. 128—142 **10 Claims**



The blood circulating in the body of the subject, e.g. in the ear pinna, is tested at suitable time intervals to detect supersaturation of oxygen, using an optical oximeter and a temporary oxygen-deficient (anoxic) breathing mixture in conjunction with a timing device to develop a signal which varies inversely with the time required for the anoxic mixture to bring the oxygen level in the blood down to saturation level, which signal is used to control the duty cycle of a valve in the line supplying oxygen to the user's breathing bag, so that between tests the user is provided with oxygen at a rate responsive to his breathing requirements to maintain his system close to 100 percent saturation in oxygen; an over-riding control being exerted by the oximeter to increase the flow rate of oxygen to the user immediately whenever the oximeter detects an oxygen level below saturation; the anoxic mixture being provided by temporarily reducing the flow rate of oxygen through the valve to a suitable low value.

3,734,092

MEDICAL RESPIRATOR

Barry John Kipling, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

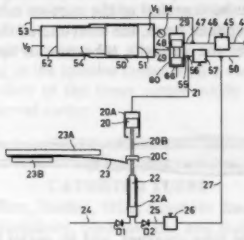
Filed Feb. 8, 1971, Ser. No. 113,279

Claims priority, application Great Britain, Mar. 18, 1970, 13,064/70

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.5 **10 Claims**

A liquid injector for medical respirators in which a predetermined quantity of patient gas is stored at higher than atmospheric pressure in a known volume during an expiratory period of a respiratory cycle and discharged to a patient during the next following inspiratory period of the cycle. The injector includes a movable member the displacement of which from a datum position controls the quantity of liquid injected into the patient gas in each cycle. This displacement is directly



proportional to the pressure of the stored patient gas and the movable member is displaced by driving means which is driven as a result of the pressure.

3,734,093

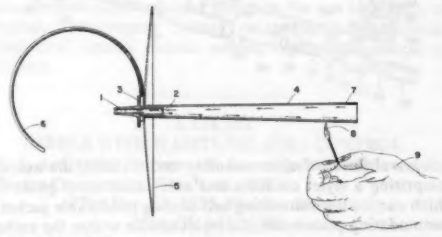
THERMAL EAR WAX EXTRACTING DEVICE

Torindo R. Paurice, Sanford, N.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,128

Int. Cl. A61f *11/00*

U.S. Cl. 128—184 **4 Claims**



A thermal ear wax extracting device comprises a tapered tubular seal unit adapted to be partially inserted into an ear of a patient. A tapered tubular heating unit many times longer than the seal unit is removably fitted onto the part of the seal unit adapted to extend outside the ear. The heating unit is adapted to burn slowly to provide heat at the seal unit. A shield is removably fitted onto the heating unit around the part of the seal unit adapted to extend outside the ear. The shield is interposed between the head of the patient and the heating unit.

3,734,094

MULTIPURPOSE ESOPHAGEAL INSTRUMENT

Teodoro A. Calinog, 320 E. North Avenue, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,044

Int. Cl. A61b *5/04*

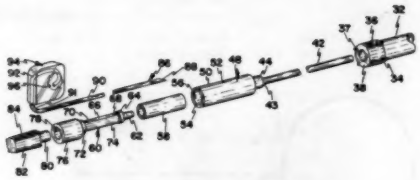
U.S. Cl. 128—2.06 E **3 Claims**

An instrument for integrated monitoring of a patient's physical condition includes a suction tube for insertion in his

esophagus, the tube being provided with an inlet in one end for stomach fluids and an outlet in its opposite end for connection to a suction machine. A portion of the tube is encircled by an acoustic tube that is spaced from it, although the inner end of the acoustic tube is sealed to the suction tube in a location adjacent to, but spaced from, the inlet end of the suction tube. The outer end of the acoustic tube has an opening through

which the suction tube emerges, and an outlet for connection to a sound-monitoring device. The inner end portion of the acoustic tube has lateral openings therein covered by diaphragm means. A plurality of spaced electrode bands encircle the acoustic tube adjacent the sleeve and are connected to wires extending outwardly along the acoustic tube and away from its outer end for connection to a heart-monitoring machine.

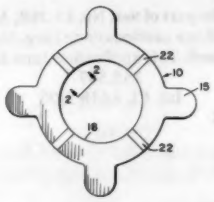
3,734,095
FLUID INFUSION
Louis S. Santomieri, 479 Oak View Drive, Vacaville, Calif.
Filed May 21, 1971, Ser. No. 145,657
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 **20 Claims**



A novel fluid infusion assembly and method, the assembly comprising a stylet catheter and associated novel guide core which carries a surmounting self-sealing penetrable jacket accommodating placement of a stylet needle within the catheter prior to venipuncture and removal of the stylet needle subsequent to venipuncture while a fluid delivery tube is continuously communicating fluid to the catheter. An improved fluid coupling is adapted to penetrate the jacket and guide core at selected locations to provide an alternate site for delivering fluid to the catheter or for delivering a plurality of fluids to the catheter simultaneously. The stylet needle has, at the curved terminal end thereof, an upstanding tab which novelly accommodates (1) aspiration of blood from the vein to a transparent portion of the tab, or (2) outflow of blood from the vein to a transparent portion of the tab by normal blood pressure and capillary action to evince a successful venipuncture. The method includes squeezing the tab prior to and during venipuncture and thereafter aspirating blood into the tab and also removing the stylet needle and penetrating the self-sealing jacket with a fluid connector.

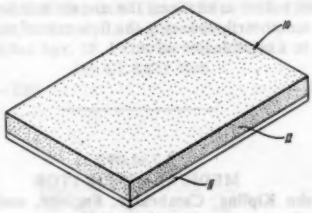
3,734,096
CONSTRUCTION FOR VENTED FECAL RECEPTACLES
Bluma Millenbach, 25 Roe Court, Islip, L.I., N.Y.
Filed July 21, 1971, Ser. No. 164,653
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **11 Claims**

Receptacles constructed in accordance with certain principles are usable for anal ileostomy or colostomy purposes wherein a plastic bag or vinyl, polyethylene, or the like is provided with a body attachment means having an open gap or gaps such as indentations which may provide contraction and expansion with a patient's sphincter and/or venting. Such indentations form vent passages in the ring face regardless of any need for expansion or contraction so that devices of similar construction can be used where no expansion is needed. For example, for infants or persons having extremely



loose or watery bowel movement and no sphincter expansion. Likewise constructions wherein expansion is not required are suitable for ileostomy or colostomy pouches applied to any required body area. In such instances, the rings can be constructed with one or more vent passages effected by gaps between the ends of adhesive members normally carried by the ring for adherence between the buttocks or to a body area. Modified gas escape vents are disclosed as variations of the invention.

3,734,097
THERAPEUTIC ADHESIVE TAPE
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 812,116, April 1, 1969, Pat. No. 3,598,122, and a continuation-in-part of Ser. No. 812,117, April 1, 1969, Pat. No. 3,598,123. This application Apr. 23, 1971, Ser. No. 136,981The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. A61f *7/02*
U.S. Cl. 128—268 **16 Claims**



Adhesive laminate tape for the topical administration of controlled therapeutically effective quantities of drug selected from the group consisting of anti-neoplastic agents, folic acid antagonists and anit-mitotic agents for the treatment of skin lesions, comprising a backing member bearing a pressure-sensitive adhesive, the adhesive having distributed therein a means for metering the flow of a therapeutically effective amount of the drug to the lesions over a prolonged period of time.

3,734,098

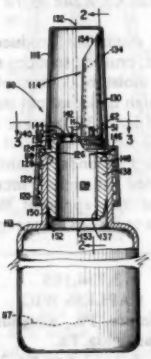
VENTED MEDICAMENT DISPENSING PACKAGE WITH SPACER

George H. Schneller, Devon; Ralph S. Levi; Howard J. Levin, both of Norristown, and Stephen W. Goodsir, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 118,009, Feb. 23, 1971, which is a continuation of Ser. No. 814,424, April 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 742,872, July 5, 1968, abandoned. This application Aug. 18, 1971, Ser. No. 172,805

Int. Cl. A61j *1/00*

U.S. Cl. 128—272 6 Claims



The disclosure is directed to an improvement in a universal dispensing package for medicaments to be dissolved in a parenteral container prior to use. The package is made up of a container and a cap which has a hollow piercing device for dispensing medicament from the container into a closed system parenteral solution bottle, and second has a frustoconical shank adapted to engage the interior surface of the neck of an open system parenteral solution container. A hydrophobic membrane filter is provided as a vent in the cap to relive the vacuum to allow for dispensing of the medicament.

The present improvement comprises spacers, or studs, formed at the base of the piercing device to space the hydrophobic vent at a predetermined distance from the parenteral container when used in conjunction with a closed system parenteral solution bottle.

3,734,099

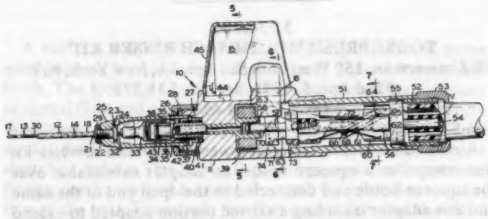
POWERED SURGICAL CUTTER

Herman G. Bender, 5205 S.E. 37th Avenue, Portland, Oreg.; Robert N. Page, Route 1, Box 872, Beaverton, Oreg., and Leslie D. Wold, 539 S.W. 188th Avenue, Aloha, Oreg.

Continuation of Ser. No. 841,741, July 15, 1969, abandoned. This application Apr. 7, 1971, Ser. No. 114,702

Int. Cl. A61b *17/32*

U.S. Cl. 128—305 7 Claims



A powered surgical cutter with its own controlled vacuum system designed to clip tissue and remove each piece as it is clipped through a vacuum line. The apparatus has an elongated external fixed tubular cutter interiorly of which a similar cutter rotates. The inner cutter is driven by a motor by means of a hollow drive shaft, the interior of which shaft is in communication with the interior of the inner cutter. Vacuum is supplied through the interior of the drive shaft to the interior of the cutter. Control means are provided whereby tissue drawn into an opening in the tubular cutter by the vacuum is sheared off by the rotation of the inner cutter inside and against the bore of the external cutter.

3,734,100

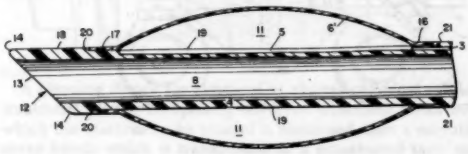
CATHETER TUBES

Robert D. Walker, Racine, Wis.; Seymour Bazell, Skokie, Ill.; Edward M. Goldberg, Glencoe, Ill., and Ralph G. Ostensen, Morton Grove, Ill., assignors to MPC/Kurgisil, a joint venture of Medical Products Corp. and E. T. Manufacturing Co., Skokie, Ill.

Filed Mar. 29, 1971, Ser. No. 128,898

Int. Cl. A61m *25/00, 16/00*

U.S. Cl. 128—351 11 Claims



Improved catheter tubes and their method of construction having a comformable balloon cuff of silicone rubber of low hardness, modulus, and stress values, and which results in less pressure necrosis and cuff failure in use. Specific examples include endotracheal tubes, Foley catheters, tracheostomy tubes, urethral catheters, and catheters for use in gastric, esophageal, pharyngeal, nasal, intestinal, rectalcolonic, choledochal, arterial venous, cardiac and endobronchial applications.

3,734,101

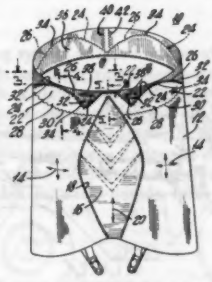
GIRDLE WITH WAISTLINE AREA CONTROL

Jack J. LoCascio, Bayonne, N.J., assignor to International Playtex Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,495

Int. Cl. A41c *1/00*

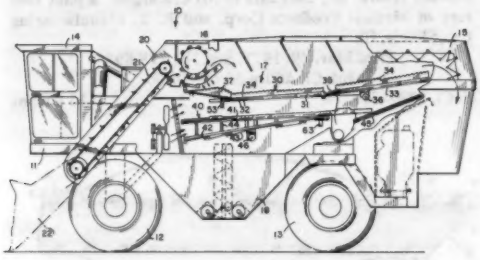
U.S. Cl. 128—533 20 Claims



A girdle is disclosed which provides for waistline area control and generally includes a body encircling and molding region terminating at an upper portion in a plurality of generally convergent marginal edges extending upwardly with respect to the body encircling region and inwardly with respect to each other to provide a plurality of open spaces between upwardly

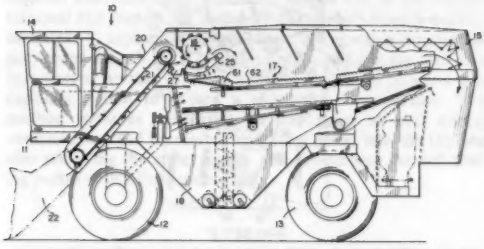
projecting areas. A transversely extensible and preferably transversely elastic band of material is superimposed substantially circumferentially along the upper portion of the girdle. The band is secured to the upwardly projecting areas along the marginal edges of such projecting areas to provide zones of lesser modulus of elasticity between said upwardly projecting areas.

3,734,102
DRIVE FOR ORBITING SIEVE OF COMBINE
Stuart D. Pool, Crystal Lake, Ill., assignor to Bernard Mathews, Crystal Lake, Ill.
Filed Nov. 1, 1971, Ser. No. 194,238
Int. Cl. A01f *12/30*
U.S. Cl. 130—26 **3 Claims**



A combine has an upper sieve and a lower sieve connected to each other at the front and rear ends by front and rear linkages. Each linkage has a rock lever, and two vertically extending links connected to the respective sieves. The rock lever is fulcrumed in walls of the combine casing. The rear end of the upper sieve is driven by a first crank and the front end of the lower sieve is driven by a second crank of less radius. The vertical crank motion of the rear end of the upper sieve is transmitted to the rear end of the lower sieve by the rear linkage, and the crank vertical motion of the front end of the lower sieve is transmitted to the front end of the upper sieve by the front linkage. The front end of the upper sieve has elliptical orbiting motion, and the whole of the lower sieve and a rear part of the upper sieve have circular orbiting motion.

3,734,103
CONCAVE FOR COMBINES
Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.
Filed Dec. 13, 1971, Ser. No. 207,444
Int. Cl. A01f *12/28*
U.S. Cl. 130—27 L **6 Claims**

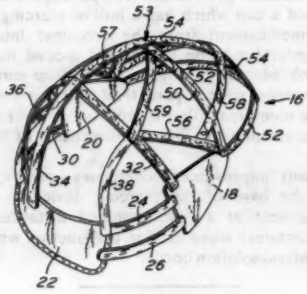


The concave has a removable blanking plate located beneath the concave bars. A transverse angle extending from one side plate to the other has horizontally and forwardly extending fingers which support the blanking plate so it can be removed in the forward direction. The front concave bar extends downwardly to block removal in the forward direction. The front concave bar is removably screwed to a cross plate to permit removal of the blanking plate. Access is provided by a door in the casing walls. A flange on the blanking plate engages the front ends of the fingers to prevent rearward movement of the blanking plate.

3,734,104
METHOD FOR EXPANDING TOBACCO STEMS
William Michaux Buchanan, and John W. Madures, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 4, 1971, Ser. No. 195,613
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P **7 Claims**

Expanded tobacco stems are produced having increased filling capacity. Rolled, crushed tobacco stems are cut to filler size and adjusted to a moisture content of about 24 to 60 percent by weight. The high moisture cut stems are subjected to hot gas containing at least 30 percent steam, whereby the moisturized stems are heated to about 250° to 750°F. for about 0.5 to less than 3 seconds. By this process, the filling capacity of the expanded cut stems is increased from 30 to 50 percent or more and the apparent density is materially reduced in comparison to that of an unexpanded control.

3,734,105
CAPLESS WIG
Marco Borghese, Ardmore, Pa., assignor to N. Wagman & Company, Inc., Philadelphia, Pa.
Filed Jan. 5, 1972, Ser. No. 215,600
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **7 Claims**

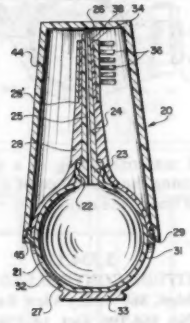


A capless wig is disclosed having a skeleton defined substantially by non-elastic lace fabric strips and a plurality of substantially parallel elastic strips on the rear half of the skeleton. Each of said strips is stitched to a hair mounting strip spirally wound with respect to the skeleton.

3,734,106
TOOTHBRUSH MOUTHWASH RINSER KIT
Eli Zimmerman, 159 West 76th St., Apt. 5A, New York, N.Y.
Filed Apr. 5, 1971, Ser. No. 131,275
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 B **9 Claims**

A combined toothbrush mouthwash rinser and tumbler kit that comprises a squeeze bottle, an adapter extendable over the squeeze bottle and connected to the open end of the same and this adapter including a skirted portion adapted to extend downwardly over the squeeze bulb with a bottom part basically connected thereto or with an opening permitting access to the squeeze bulb so that the rinser liquid can be forced out-

wardly therefrom. The adapter includes a support for a toothbrush element, which the element may include a stem or by which the toothbrush element may be slipped over the end of the adapter in a manner to keep the same from turning and held against axial displacement therefrom. A tumbler made of plastic to be tight fitted downwardly on to the skirted portion surrounding the squeeze bottle or directly on to the squeeze bottle according to the last form of the invention. This tumbler



makes for a sanitary kit and also serves to provide storage space for toothpaste and other brush elements of different bristle strength. The adapter may include valve arrangement and the stem may be releasably removable from the adapter and when tightened upon the same will close a valve surface on the stem upon it being brought against a valve extension on the adapter so that the outlet through the adapter is closed when the brush stem is tightened down upon the adapter.

3,734,107

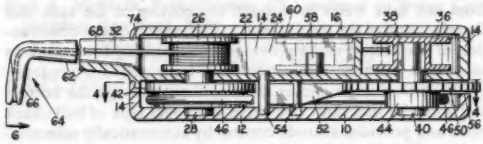
DENTAL FLOSS TOOTH CLEANING TOOL

Irwin B. Thierman, 8817 N. Swenson St., Portland, Oreg.

Filed Nov. 12, 1971, Ser. No. 198,263

Int. Cl. A61c *15/00*

U.S. Cl. 132—92 A **5 Claims**



A tool for holding dental floss and being capable of being manipulated for cleaning interproximal areas between the teeth. The tool has a body member supporting a supply spool of dental floss and a take-up spool. A pair of arms project from the body member and have downturned fingers across which dental floss between the supply spool and take-up spool is stretched tightly. The dental floss being supported across the fingers can be worked between the teeth by suitable manipulation of the tool. The supply spool of dental floss and the take-up spool have a rotatable connection with each other such that when new dental floss is presented to the fingers such floss is simultaneously taken up and held tight.

3,734,108

CLEANING DEVICES FOR CHEMICAL OR ELECTRO-CHEMICAL SURFACE TREATMENT PLANTS

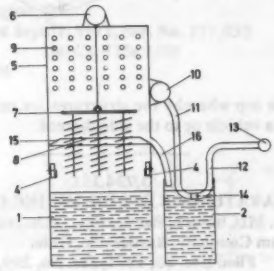
Svante G. Almegard, Savedalen, and Harry A. H. Ericson, V. Frolunda, both of Sweden, assignors to Nordnero AB, Goteborg, Sweden

Filed Dec. 8, 1971, Ser. No. 206,015

Claims priority, application Sweden, Dec. 10, 1970, 16693/70

Int. Cl. B08b *3/02*

U.S. Cl. 134—76 **8 Claims**



A cleaning device for chemical or electro-chemical surface treatment plants, comprising different treatment tanks into which the material to be treated is immersed, uses a movable spray booth which is transported to a preselected tank and stops in a position above said tank. The material having its treatment finished in said tank is lifted up through the bottom of said spray booth and is sprayed with cleaning liquid inside it.

3,734,109

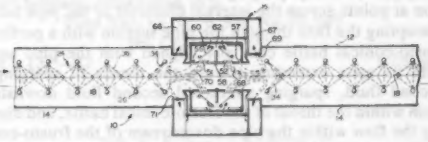
SPRAY CLEANING SYSTEM

Philip G. Hebner, 5430 West Marginal Way SW, Seattle, Wash.

Filed Mar. 8, 1971, Ser. No. 121,680

Int. Cl. B08b *3/02*

U.S. Cl. 134—64 **19 Claims**



A spray cleaning system adapted to operate upon elements of extended length including a confined area having a path of travel along which the elements are conveyed, a plurality of spray stations each having spraying units aligned on either side of the path of travel, and a pneumatic isolating station positioned between successive spray stations to direct a flow of air upon the surfaces of the elements at a low velocity to prevent cross contamination between liquids sprayed in successive spray stations.

3,734,110

PREFABRICATED STRUCTURE ADAPTED TO BE ATTACHED TO A VEHICLE TOP

Mark T. Burns, 4557 Alameda Drive, Fremont, Calif.

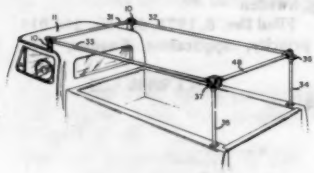
Filed Oct. 26, 1971, Ser. No. 192,418

Int. Cl. E04f *1/343*

U.S. Cl. 135—1 A **1 Claim**

Structures such as racks, shelters and the like which are adapted to be attached to a vehicle top are assembled with

corner members which are shaped to receive and grip different lengths of pipe. These structures are also provided to the vehicle top whereby the structures are readily attached to the top of a vehicle or to the side thereof.

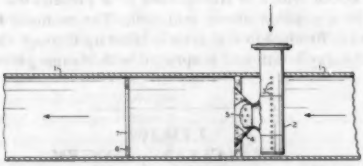


3,734,111

APPARATUS FOR IN-LINE MIXING OF FLUIDS

William A. McClintock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1971, Ser. No. 209,575
Int. Cl. G05d *11/02*
U.S. Cl. 137—3 **6 Claims**



A method and apparatus are provided for mixing a fluid traveling in a pipe section with a second fluid introduced into the pipe section by sparging the second fluid into the pipe section at points across the internal diameter of the pipe section, disrupting the flow through the pipe section with a perforated frusto-conical baffle coaxially aligned with the pipe section with its apex extending toward the means of sparging the second fluid, sparging additional second fluid downstream from within the throat of the frusto-conical baffle, and disrupting the flow within the pipe downstream of the frusto-conical baffle and sparging means with a line restriction extending from the pipe section sidewalls into the pipe section to create an orifice of smaller diameter than the pipe section inside diameter coaxially aligned with the pipe section.

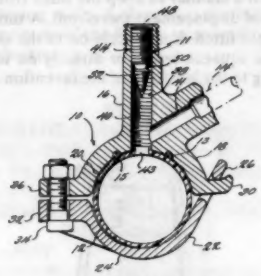
3,734,112

METHOD OF TAPPING A HOLE IN A MAIN THROUGH A FITTING

Robert R. Finney; Lawrence F. Luckenbill, both of Decatur, and Gerry E. Kissell, Charleston, all of Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 868,040, Oct. 21, 1969. This application Mar. 10, 1971, Ser. No. 122,986
Int. Cl. B23b *41/08*
U.S. Cl. 137—15 **4 Claims**

A method for opening a flow-way in a main when a main is to be connected to a secondary main or service line. In opening the flow-way in the main, a perforator or tapping tool is utilized, which will progressively form the hole or aperture in the main by upsetting the material of the main outwardly of the same into the through bore of a fitting attached to the main, the upset material acting as a mechanical fastening means for increasing the resistance of a fitting to twist about the axis or center line of the main.

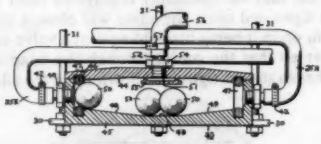


3,734,113

ATTITUDE CONTROLLED VALVE

Bernard G. Madden, 860 Valley View Road, Flourtown, Pa.

Division of Ser. No. 866,196, Oct. 14, 1969, Pat No. 3,590,399
Filed June 24, 1971, Ser. No. 156,357
Int. Cl. E04h *3/19*
U.S. Cl. 137—40 **8 Claims**

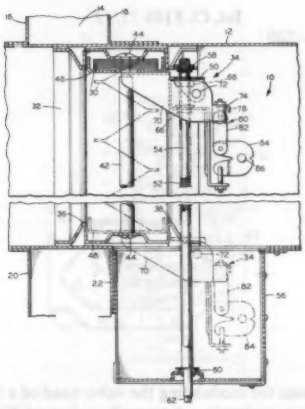


A flotation system including a plurality of gas/liquid ballast tanks secured to the underside of a platform and all connected to a novel gas distribution valve also secured to the platform which selectively delivers gas to the ballast tanks in such manner as to maintain the desired attitude of the platform within the liquid medium. The ballast tanks are open bottomed and function as air traps, the degree of flotation afforded to the platform being controlled by injecting or withdrawing air of other gas to respectively force water out from and take water in through the bottom of the tank and thereby control the displacement. The open bottom construction of the ballast tanks provides a self-limiting tilt feature to each tank because inclination of a tank above a predetermined critical angle causes air to spill out through the bottom and limit the flotation. The valve is a novel type of ball check valve and provides attitude control by automatically selectively controlling the ratio of gas to liquid within each ballast tank through the check ball feature, while elevation control is effected by simultaneously changing the ratio of gas to liquid in all ballast tanks. The control valve is formed with a plurality of ports spaced peripherally about the sidewall of the valve body. The upper surface of the valve body bottom wall is provided with a central horizontal platform region disposed at a level below that of each of the ports, from which the floor extends radially outward and slopes upward toward the ports. A plurality of spherical balls are seated on the central platform when the latter is in a horizontal position, and when the valve body is tilted are free to roll outward and block any of the ports disposed at a lower elevation than the central platform. The mechanism may be adjusted to provide a slope to the platform or other controlled device where such an arrangement is desired.

3,734,114
ADJUSTABLE DAMPER VALVE

Leonard R. Phillips, Westfield, Mass., assignor to Sterling Radiator Company, Inc., Westfield, Mass.

Filed Jan. 5, 1972, Ser. No. 215,464
Int. Cl. F16k *17/40*; **E05f** *15/20*
U.S. Cl. 137—68 **12 Claims**

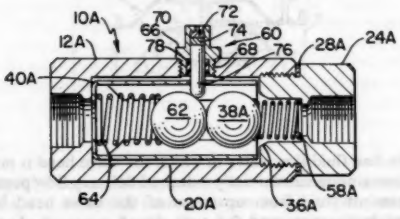


An adjustable damper valve having a housing forming an axially extending passageway utilizes a resilient metallic shutter containing a plurality of pleat-type folds to permit the shutter to expand transversely across the passageway and close a ventilating duct. An adjustable platform bearing a bracket that is pivotable into or out of engagement with the metallic shutter is mounted on a lead screw that may be rotated to adjust the transverse position of the bracket in the passageway and correspondingly limit the resilient expansion of the shutter across the passageway. The bracket is held in engagement with the metallic shutter by means of a frangible link which when broken permits the bracket to pivot relative to the adjustable platform and out of engagement with the shutter so that the shutter can completely close the passageway. Several frangible links responsive to different conditions are connected serially together to hold the bracket so that the shutter closes automatically when a condition to which any one of the links is sensitive is present.

3,734,115
SPRING BIASED SAFETY VALVE

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, New York, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,171
Int. Cl. F16k *15/04, 17/30, 17/38*
U.S. Cl. 137—73 **9 Claims**

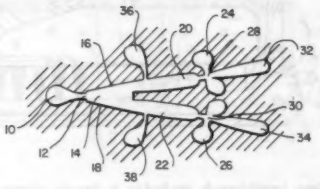


A biased safety valve for preventing the flow of materials therethrough in the presence of predetermined conditions is disclosed. Resilient means urges an outlet closure member upstream away from the outlet. When the predetermined conditions have been met, the closure member overcomes the resistance of the resilient means and is seated against the outlet to prevent further flow therethrough.

3,734,116
BACK PRESSURE SENSITIVE SWITCH FOR A FLUERIC DEVICE

R. Pierce Trask, II, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1971, Ser. No. 177,033
Int. Cl. F15c *1/08*
U.S. Cl. 137—836 **5 Claims**

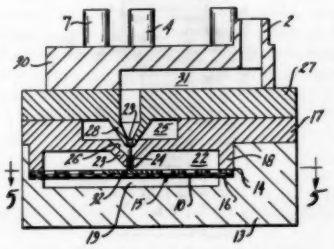


A back pressure sensitive fluidic switching mechanism is disclosed. A fluidic device incorporating this mechanism will switch from one output receiver channel to another under the effect of back pressure produced by a control signal issuing from a control port disposed at, in, or near the output channel of the device. Decoupling vents are provided downstream of the control ports in each output receiver channel so as to insulate the device from the effects of load impedance. Operational stability may be achieved by the provision of side vents in conjunction with each control port such that the control signal, when applied, serves to block the vent.

3,734,117
FLUID DIAPHRAGM MODULATOR

Louis D. Atkinson, New Berlin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 18, 1970, Ser. No. 90,707
Int. Cl. G05d *16/00*
U.S. Cl. 137—82 **8 Claims**



A pair of spaced and series connected nozzles terminate in a first coupling chamber with a flat spring-loaded diaphragm forming an outer wall. A second coupling chamber closes the spaces between the nozzles. The diaphragm is a common wall with an input chamber. A main fluid supply is connected to either the first coupling chamber or to the first nozzle and an output or a reference pressure means is correspondingly connected to the second coupling chamber. A supply to the nozzle establishes aspiration between the two nozzles with a resulting negative pressure level. A control input signal to the

input chamber moves the spring-loaded diaphragm toward the second nozzle with an increased pressure in the second chamber. Alternatively, the output is connected with the supply to the first chamber and the nozzles and second chamber are connected to references to establish unit gain and provide a repeater.

3,734,118

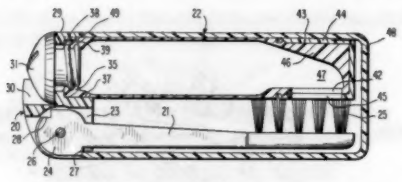
FOLDABLE TOOTHBRUSH WITH PASTE SUPPLY: AND DISPENSER AND COVERING MEANS

Frances B. Howard, 1011 College Street, Columbus, Miss.

Filed Nov. 26, 1971, Ser. No. 202,300

Int. Cl. A63h 27/00

U.S. Cl. 132—84 **16 Claims**



A folding toothbrush includes a brush element which is pivoted to a carrier member and shiftable on this member from non-use to use positions. The carrier member also forms the support and alignment means for a pliable receptacle for toothpaste having a discharge slot which registers with the brush head when the brush is in the completely folded non-use position. A cover member for the brush and receptacle in the non-use position serves as a handle when the brush is extended for use.

3,734,119

APPARATUS FOR DETERMINING VISCOSITY

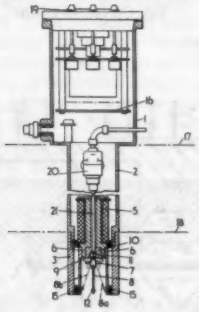
Derrick Albert Nudds, Brentwood, England, assignor to N. V. Tools Limited, Brentwood, Essex, England

Filed Feb. 7, 1972, Ser. No. 224,031

Claims priority, application Great Britain, Feb. 8, 1971, 4,181/71

Int. Cl. G05d 24/02

U.S. Cl. 137—92 **7 Claims**



Apparatus for determining the viscosity of a liquid which includes a pivoted paddle or like member arranged to be immersed in the liquid and driven by means of an electromagnetic force acting upon the member, means for reversing the direction of the electromagnetic force each time the member reaches a predetermined point in each direction of its travel and thereby causing the member to be driven back and forth in the liquid, and means for introducing a further liquid into the said liquid in such a way that in passing to the liquid said further liquid serves to lubricate the pivot of the member.

3,734,120

CONTROL MEANS FOR FLUID FLOW VALVES

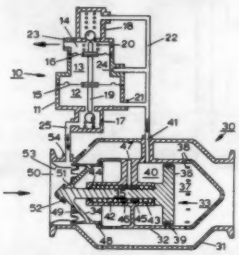
Alan Charles Rowe, East Chinnock, near Yeovil, and John Richardson Bennett, Yeovil, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, Somerset, England

Filed Nov. 5, 1971, Ser. No. 195,992

Claims priority, application Great Britain, Nov. 20, 1970, 55,347/70

Int. Cl. F16k 31/12

U.S. Cl. 137—220 **8 Claims**



Control means for modulating the valve head of a fluid flow delivery valve to maintain substantially a desired flow condition. Pressure of the fluid flow being delivered operates pressure differential means which are arranged to regulate a pressure reducer through which fluid is supplied from upstream of the valve head to a datum pressure chamber. The valve head is responsive to pressure in the datum chamber and thereby is modulated by varying fluid flow delivery.

3,734,121

FLUID FLOW VALVES

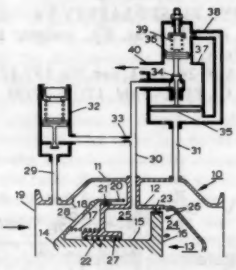
Alan Charles Rowe, East Chinnock, Near Yeovil, Somerset, and John Richardson Bennett, Yeovil, Somerset, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, Somerset, England

Filed Nov. 5, 1971, Ser. No. 195,993

Claims priority, application Great Britain, Nov. 20, 1970, 55,348/70

Int. Cl. F16k 31/12

U.S. Cl. 137—220 **10 Claims**



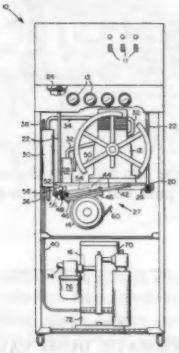
An in-line fluid flow valve in which the valve head is modulated to maintain substantially a desired delivery flow pressure by means of fluid from upstream of the valve head being reduced in pressure and fed to a datum pressure chamber operably associated with the valve head. The pressure being fed to the datum pressure chamber is regulated by means of a bleed valve which is itself regulated by variations of the delivery flow pressure.

3,734,122

DENTAL COMPRESSED AIR/VACUUM APPARATUS

Leroy L. Cousins, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,867
Int. Cl. F16k 49/00
U.S. Cl. 137—340 12 Claims



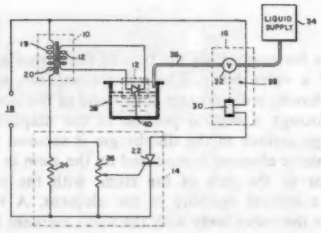
Disclosed is a combined water ring vacuum pump and compressor, both mounted in a single cabinet. The vacuum pump is mounted in the base of the cabinet, the compressor is mounted on a vibration insulated platform suspended from the top of the cabinet and the compressor drive motor is attached to the underside of the support platform. A water line connects the compressed air heat exchanger to the water ring vacuum pump, so that the water introduced into the vacuum pump is first used to cool the air from the compressor.

3,734,123

CONTROL MEANS REGULATING A SUPPLY OF LIQUIDS

Daniel I. Pomerantz, Lexington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed July 14, 1971, Ser. No. 162,418
Int. Cl. G05d 9/12
U.S. Cl. 137—392 10 Claims



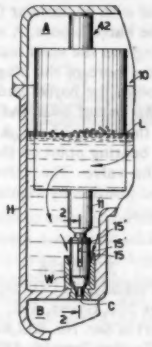
Liquid flow regulating means is responsive to a switching means, the switching means in turn being responsive to the amount of current flowing through a constant voltage source, the amount of current from the constant voltage source being controlled by a semiconductive current control means which is sensitive to the temperature differences produced by immersion in the liquid.

3,734,124

STAGED THROTTLING FLOAT VALVE

Paul Zanoni, Muskegon, and Richard F. Shunta, Muskegon Heights, both of Mich., assignors to Bennett Pump Incorporated, Muskegon, Mich.

Filed July 19, 1971, Ser. No. 163,859
Int. Cl. F16k 31/18
U.S. Cl. 137—430 4 Claims



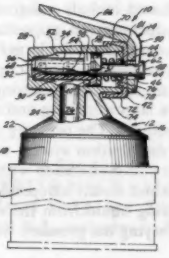
A throttling mechanism to be embodied as part of a float valve for controlling the flow through an orifice includes a stem portion having concentrically mounted thereon a primary throttling valve mechanism and a secondary throttling valve mechanism. As the buoyancy force of the float is increased, the primary valve opens to allow flow through the orifice to stabilize the position of the float valve. Additional buoyancy force acting on the float will cause the secondary throttling valve to open thereby enabling increased flow through the orifice. Under conditions of varying pressure differential, the float valve will tend to bob up and down adjusting the total flow area as required, to maintain a constant liquid level.

3,734,125

PRESSURIZED CONTAINER DISPENSING VALVE HAVING EXCESSIVE PRESSURE SAFETY FEATURE

Roger K. Bruce, Mission Viejo; Werner Marhold, Huntington Beach, and Cecil F. Adickes, Playa Del Rey, all of Calif., assignors to Sterigard Corporation, Santa Ana, Calif.

Filed Feb. 10, 1971, Ser. No. 114,204
Int. Cl. F16k 31/14
U.S. Cl. 137—495 24 Claims



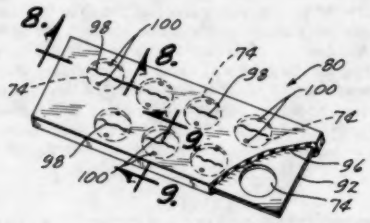
A one-piece molded plastic housing of a dispensing valve has a barrel for the valve's valving mechanism. The base is adapted to be pressure tightly attached to a dispenser. In order to maximize the number of valve housings produced in a given mold base, a base parting plane extends along the base's longitudinal axis slightly into the barrel. A transition parting plane extends from the terminus of the base parting plane at a slight angle from a normal to the base parting plane to meet a barrel parting plane close to the rear end of the barrel. An an-

nular external flange extends partly around the barrel and meets the barrel parting plane and terminates at the transition plane. With this parting plane pattern, a core pin for the barrel's bore can be carried by a mold half, thereby eliminating complicated and space consuming core pin ejection mechanisms. The valving mechanism includes a plug disposed in the barrel's bore for translation between a closed position and an open position. In the closed position, the plug seats on an interior seat of the barrel. This seat defines a line seal. The plug has a cupped seal with an annular flexible lip in engagement with a wall of the barrel's bore. A valve stem is attached to the plug by lock rings on the stem received in complementary recesses in an axial bore of the plug. The valve stem extends rearwardly through the barrel and past its end. A rear cap is attached to the barrel over the external flange and closes the rear end of the barrel's bore. An actuator is engaged to the stem and has a bearing point on the rear cap for pivotal movement to open the valve. The valve stem and plug are biased into their closed position by a spring bearing against the rear cap and the cup seal.

3,734,126
LIQUID PRESSURE CONDITIONER

Donald F. Weaver, Box 208, Grove, Ark.

Continuation-in-part of Ser. No. 852,800, Aug. 25, 1969, abandoned. This application June 16, 1971, Ser. No. 153,739
Int. Cl. F16k *15/14*
U.S. Cl. 137—512.15 **6 Claims**



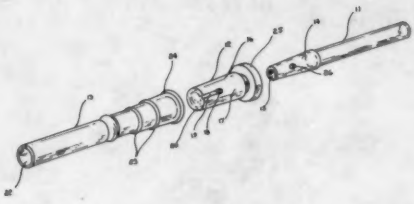
A device including a chamber having inlet and outlet openings on opposite sides thereof, a baffle means disposed therebetween forming compartments. The baffle includes a rigid strengthening member embedded in resilient and pliable material. A plurality of normally closed large openings responsive to a predetermined pressure in either of the compartments are provided and include relatively smaller normally open flow-through openings on opposite sides thereof. The resilient and pliable material of the larger opening upon being displaced outwardly causes the smaller openings to be closed. The frame includes an opening registering with each group of openings including a larger opening and a pair of smaller oppositely disposed openings. The pressure conditioner unit may be used in a liquid distribution system wherein hot and cold water supplies are in communication with the inlet side of the pressure conditioner and means independent of a water heater is provided for drawing liquid from the cold liquid source at times and thereby varying the pressure within the heater container.

3,734,127
STOPCOCK-JOINT ASSEMBLY

Joel L. Williams, 18 Lake St., Rt. 2, Box 136, Cary, and Vivian T. Stannett, 1105 Bancroft St., Raleigh, both of N.C.

Filed Dec. 27, 1971, Ser. No. 212,215
Int. Cl. F16k *45/00*
U.S. Cl. 137—583 **12 Claims**

In abstract, a preferred embodiment of this invention is a combination stopcock-joint assembly used in laboratory work and particularly suited for high vacuum sample testing. This assembly is formed of three parts; namely, the double round joint with a hole and channel, a female joint and a male joint

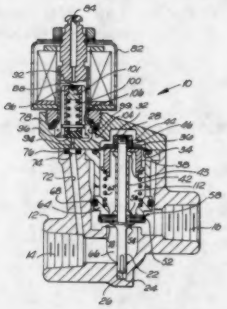


with a hole. When the two holes are aligned, a vacuum can be drawn through the joint but when the holes are misaligned a seal is formed.

3,734,128
PNEUMATIC DUMP VALVE

John P. Etcheverry, Sylmar, and James B. Doolittle, Burbank, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,235
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.2 **6 Claims**



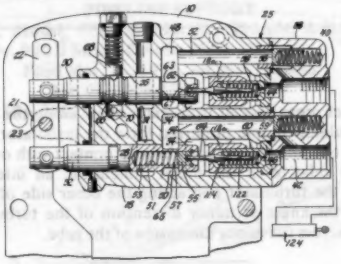
A valve for controlling the flow of fluid from an inlet to an outlet of a valve body. The valve comprises a valve stem member having a diaphragm at one end of the stem. The stem passes through a central portion of the diaphragm and an outer edge surface of the diaphragm is secured to the valve body. A valve element is mounted on the stem in a plane perpendicular to the axis of the stem, with the stem passing through a central opening in the element. A valve seat is formed in the valve body with the valve element being movable between a first and second position, to permit the valve element to prevent or allow the flow of fluid from the inlet to the outlet, respectively. A pilot valve comprises a solenoid which has an opening which allows atmospheric pressure to be coupled to one side of the diaphragm. Further, energization of the solenoid causes a pilot valve element to close the solenoid opening and allow inlet pressure to be coupled to the one side of the diaphragm. Further, a check valve allows pressure in the outlet side of the valve to be released when the valve element seals the inlet from the outlet.

3,734,129

HYDRAULIC CONTROL VALVE

Jean Claude Van Dest, Westland, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed May 20, 1971, Ser. No. 145,355
Int. Cl. F16k 11/00
U.S. Cl. 137—596 7 Claims



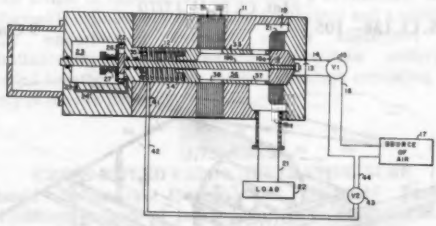
A hydraulic directional valve system which may be used for controlling motor cylinders associated with a tractor or the like has paired sliding spool valves operated in opposite directions by a walking beam lever to control connection of an inlet and an outlet with either of a pair of motor ports. Slow rates of feed are obtained by metering the flow out of the motor port, whether induced by pump pressure or gravity. For this purpose, a pilot operated metering-out valve has its pilot controlled by the main spool to provide first a series of gradually increasing small openings and during final movement of the spool to cause instantaneous opening of a large pilot operated metering-out valve which opens in a direction opposite to the movement of the main spool. The system includes a pilot operated pressure relief valve which provides unloading of the supply pressure when all directional valves are in neutral, which provides also hydraulic detent release for the main spool during slow metering and when pressure builds up at the end of a motor stroke and which further provides overload relief at a still higher maximum pressure.

3,734,130

FIRING VALVE

Paul F. Hayner, Lexington, Mass., and Edgar R. Bernier, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 3, 1972, Ser. No. 240,607
Int. Cl. F16k 11/00
U.S. Cl. 137—596.1 8 Claims



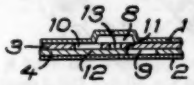
A firing valve for charging a load with compressed gas, such as air, is disclosed in which admission of compressed gas from a source to the valve displaces a piston against the restraint of a dashpot so as to open a passageway from the source to the load at a controlled rate. During charging, a second piston, slideable with respect to the first, is displaced to block a venting passageway but unblocks this passageway during retraction when the system is to be discharged.

3,734,131

FLUID CONTROLLED LOGIC CIRCUITS

Simeon Lekarski, Saint-Cloud; Pierre Hardy, and Leon Hardy, Paris, all of France, assignors to Jean Gachot, Enghien-les-Bains, France

Filed Dec. 1, 1970, Ser. No. 93,968
Claims priority, application France, Feb. 12, 1969, 6941589
Int. Cl. F15c 3/04
U.S. Cl. 137—608 7 Claims



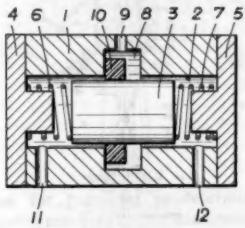
The invention relates to an improvement in fluid controlled logic circuits comprising a network of fluid circulation conduits and relays for carrying out the logic functions, wherein the circuits are constituted of stacked flat elements in which is made a network of fluid conduits, and which are shaped to constitute the movable members of the relays.

3,734,132

SHUTTLE VALVE

Herbert F. Kuhnelt, Vienna, Austria, assignor to Hoerbriger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed June 25, 1971, Ser. No. 156,621
Int. Cl. F16k 11/02
U.S. Cl. 137—625.49 6 Claims



A shutle valve serving as a pneumatic selector switch for alternately directing incoming impulses from one input to two different outputs. The valve comprises a housing having a piston therein freely movable between two end positions, provided with a sealing ring and controlling the flow of fluid from the input to the outputs.

3,734,133

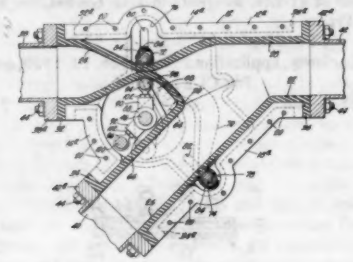
DIVERTER PINCH VALVE

Robert K. Little, Mount Holly, and Edgar Barry Lincoln, Pennsauken, both of N.J., assignors to RKL Controls, Inc., Hainesport, N.J.

Filed Dec. 2, 1970, Ser. No. 94,413
Int. Cl. F16k 7/06, 11/14
U.S. Cl. 137—636 14 Claims

A pinch type diverter valve including a hollow Y-shaped resilient valve body having a pair of angularly disposed leg portions. The valve body is disposed within a housing which includes means for selectively pinching the leg portions to control flow therethrough. The pinching means includes an outer pinch bar and an inner pinch bar arranged in substantially opposed relation adjacent each leg portion, and actuating means for selectively moving the inner and outer pinch

bars to provide a gas tight closure of one leg portion while at the same time providing a fully open passage within the other



leg portion. The pinch bars may also be disposed selectively at any desired intermediate position, permitting use of the valve as a mixing valve.

3,734,134

VALVE ARRANGEMENT HAVING TWO VALVES IN A COMMON HOUSING AND USE OF THE ARRANGEMENT IN A VAPOR GENERATING AND UTILIZING PLANT

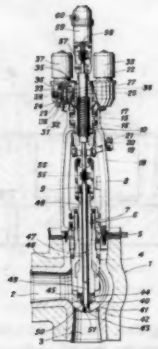
Ernst Vogeli, Wiesendangen, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Continuation of Ser. No. 3,052, Jan. 15, 1970, abandoned. This application Oct. 27, 1971, Ser. No. 193,224

Claims priority, application Switzerland, Jan. 28, 1969, 001240/69

Int. Cl. F16k *1/02*

U.S. Cl. 137—637.2 **5 Claims**



The invention relates to a valve design wherein a smaller and a larger valve are placed in a common housing and arranged for independent operation, the smaller valve serving for regulating the flow of operating fluid therethrough and the larger valve affording full flow or no flow of operating medium therethrough. The invention also relates to the use of the valve arrangement in a steam or vapor generating plant for facilitating starting thereof.

3,734,135

HEAT EXCHANGER WITH INTERNAL TURBULATOR

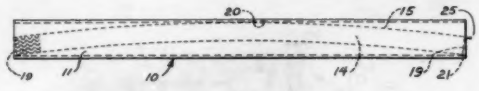
James A. Mosier, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Sept. 3, 1971, Ser. No. 177,640

Int. Cl. F15d *1/02*

U.S. Cl. 138—38 **10 Claims**

A tubular heat exchanger having a fluid flow tube with transverse minor and major dimensions and an elongated agitator fin turbulator in the tube also having minor and major dimensions in which the minor dimension of the turbulator spans the minor dimension of the tube and the major dimension of the turbulator is less than the major dimension of the tube but with the turbulator in its major dimension contacting opposite sides of the interior of the tube in its major dimension



at contact areas spaced from each other along the length of the turbulator. In one preferred form the turbulator is bowed with the two ends of the turbulator in contact with one side of the tube relative to the major dimension, an intermediate point of the turbulator contacting the other side of the tube and the thickness or minor dimension of the turbulator extending across the minor dimension of the tube.

3,734,136

PIPELINE CONTENTS IGNITER

Kenneth W. Lefever, Waterford, Va., assignor to Valdez-Lefever Artic Gas and Oil Transportation Corporation, Washington, D.C.

Filed Mar. 30, 1971, Ser. No. 129,548

Int. Cl. F16l *55/00*

U.S. Cl. 138—103 **4 Claims**

A pipeline for transmitting crude oil or the like is fitted with longitudinally extending igniters, each comprising a casing containing thermite packed about a phosphorus core. If a violent rupture of the pipeline occurs at least one igniter will also be ruptured, whereupon the phosphorus will ignite the thermite, which will in turn ignite the pipeline contents so that such will burn off rather than pollute streams and other features of the nearby area.

3,734,137

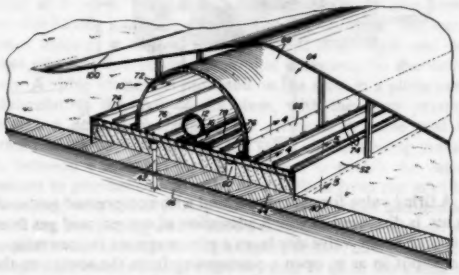
PIPELINE TRANSMISSION SYSTEM

Robert L. Stanley, 819 Bowen, Longmont, Colo.

Filed Jan. 25, 1971, Ser. No. 109,512

Int. Cl. B61b *13/10*

U.S. Cl. 138—105 **9 Claims**



An elongated oil or gas pipe mounted on an elevated platform insulated from the ground surface. The pipe is enclosed

within a full length insulated housing which contains service pipes, rails, and the like. At selected points along the system, game crossings are provided to enable a maintenance of the natural game paths and migratory patterns of the wildlife of the area.

3,734,138

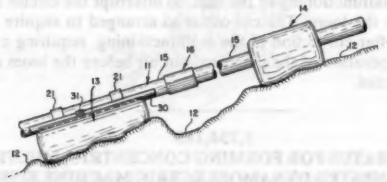
OIL OR LIKE TRANSPORTATION SYSTEM AND PIPELINE SUPPORT

Byron T. Brown, 1818 S. 16th St., Phoenix, Ariz., and B. Stahmer, 902 D Street, Omaha, Nebr.

Filed Mar. 26, 1971, Ser. No. 128,468

Int. Cl. E02d *27/46*; F16l *3/00*

U.S. Cl. 138—106 **6 Claims**



An oil or like pipeline system is supported upon randomly spaced pillars each comprising a rubber or like container filled with a fluidic material such as styrofoam, sand water or the like.

3,734,139

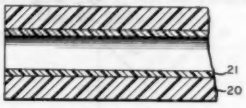
COMPOSITE THERMOPLASTIC STRUCTURE

Dimitri P. Zafiroglu, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 820,028, May 21, 1968, abandoned, which is a division of Ser. No. 488,581, Sept. 20, 1965, Pat. No. 3,454,443. This application May 5, 1971, Ser. No. 140,547

Int. Cl. F16l *9/12*; B29c *27/20*; B32b *31/26*

U.S. Cl. 138—146 **5 Claims**



An article of manufacture comprising a substantially non-deformable cylinder of polytetrafluoroethylene and a substantially unperforated cylinder of a copolymer of tetrafluoroethylene and hexafluoropropylene uniformly bonded together to form an integral structure consisting entirely of the two polymers.

3,734,140

CROSS-RIFLED VAPOR GENERATING TUBE

Hisashi Nakamura, Ibaragi, and Masatoshi Tanaka, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

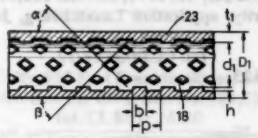
Filed July 1, 1970, Ser. No. 51,434

Claims priority, application Japan, July 2, 1969, 44/52752

Int. Cl. F16l *9/00*

U.S. Cl. 138—177 **4 Claims**

A vapor generating tube of the two-phase type which is operated at a pressure between sub-critical and critical pressure of the vapor has a tube-like body through which fluid is passed. The inner wall surface of the tube is crossed-rifled to provide a plurality of quadrilaterally shaped projections uniform and regularly spaced along the cross-rifled axes. The minor inside diameter d_1, the projection height h of each projection, the projection pitch P, projection width b, and spiral



lead angle α and β have the following relationships: P/h is from 5 to 4 h/d_1 is from 0.005 to 0.08, b/P is in the range of 0.2 to 0.8, and the spiral lead angles $\alpha+\beta$ are from 20° to 80°.

3,734,141

MECHANISM FOR PREPARING PREDETERMINED WEFT YARN LENGTHS IN A WEAVING MACHINE

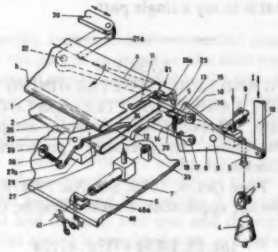
Hubert Peter van Mullekom, Deurne, Netherlands, assignor to N.V. Machinefabriek L. Te Strake, Deurne, Netherlands

Filed Dec. 22, 1971, Ser. No. 210,729

Claims priority, application Netherlands, Dec. 28, 1970, 7018895

Int. Cl. D03d *47/34*

U.S. Cl. 139—122 H **10 Claims**

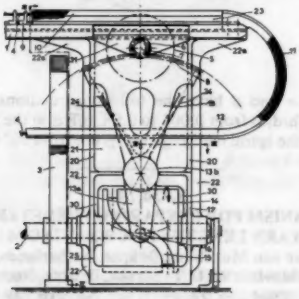


A mechanism for preparing predetermined weft yarn lengths in a weaving machine having continuous unwinding of the yarn from a stationary yarn spool, comprising two buffer stores positioned substantially parallel to each other, each adapted to receive a weft yarn length in the form of a loop, a loop fixation device and a yarn supply means movable with its discharge opening between two end positions, each situated in front of an entrance mouth of a store, the arrangement being such that the yarn supply means supplies a yarn length to the one and the other buffer store and that the loop fixation device is operated each time when the supply means is transferred from the one to the other end station for fixing the loop length received in the one buffer store, wherein the buffer stores are positioned with their planes containing the loops opposite to each other and that the yarn supply means is movable in a plane perpendicular to the loop planes and containing the paths for the ingoing loop legs in both stores, the loop fixation device comprising at each end station a means that is operated when the supply means moves towards the other end station in order to keep the loop leg delivered previously by the supply means to the relative buffer store in its place, while between both stores a transfer means is reciprocally movable in the transverse direction for catching the yarn portion which has been drawn by the movement of the supply means from the one to the other end station, between said stations and transferring it to a point adjacent to the paths for the outgoing loop legs in both stores.

3,734,142
SHUTTLELESS LOOM

Raymond Dewas, 120 Boulevard de Saint-Quentin, 80 Amiens, France

Filed July 15, 1971, Ser. No. 162,916
Claims priority, application Luxembourg, July 21, 1970, 61379
Int. Cl. D03d 47/12
U.S. Cl. 139—123 **6 Claims**

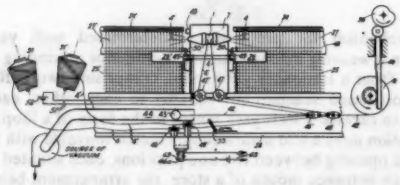


The complete assembly which comprises the body of the cam casing, the connection between the casing and the batten, the bearing which supports the pivotal shaft of the lever which carries the toothed sector as well as its connection with said casing and with the batten is constructed in the form of a one-piece unit, that is to say a single part.

3,734,143
MEASURING AND LENGTH DETERMINING MEANS FOR WEFT YARN IN SHUTTLELESS LOOMS

Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex, Zavody textilniho strojirenstric generalni reditelstvi, Liberac, Czechoslovakia

Filed Oct. 9, 1970, Ser. No. 79,478
Claims priority, application Czechoslovakia, Oct. 10, 1969, 6777/69
Int. Cl. D03d 47/30, 47/34
U.S. Cl. 139—127 P **8 Claims**



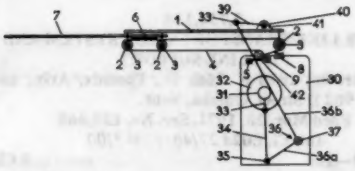
A shuttleless loom having a pneumatic delivery means and apparatus for measuring and determining the length of weft yarn fed thereto. The apparatus is adapted to pull a length of yarn from a supply, in cyclic action and hold the same under tension while being fed to the pneumatic means.

3,734,144
WEFT INSERTER DRIVE MEANS SAFETY DEVICE OF A SHUTTLELESS LOOM

Pierre Remond, Bourgoin-Jallieu, France, assignor to Ateliers Diederichs, Bourgoin-Jallieu, France

Filed Apr. 13, 1971, Ser. No. 133,607
Int. Cl. D03d 51/18
U.S. Cl. 139—336 **2 Claims**

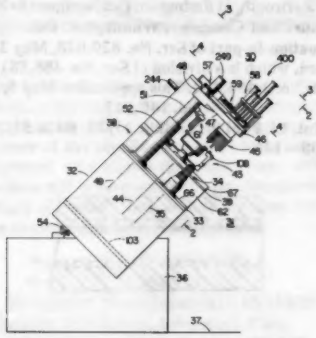
A weft inserter safety device and driving means for a shuttleless loom of the kind including at least one weft inserter which is driven by a belt or like element which is fixed by its ends to stationary parts of the loom and which passes over rollers of the weft inserter, including a micro switch associated with the belt and with an electrical circuit including a relay and a cut-out. The micro switch serves, when rendered operative by malfunctioning of the belt, to interrupt the circuit and thus stop the loom. The cut-out is so arranged to require actuation after correction of the malfunctioning, requiring a resetting operation of the electrical circuit before the loom can be re-started.



3,734,145
APPARATUS FOR FORMING CONCENTRIC, MULTI-TURN, NESTED DYNAMOELECTRIC MACHINE FIELD COILS

Robert J. Eminger, and Clayton L. Tyson, both of Fort Wayne, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Division of Ser. No. 824,121, May 13, 1969, Pat. No. 3,631,591, which is a division of Ser. No. 640,156, May 22, 1967, Pat. No. 3,481,372. This application Apr. 20, 1971, Ser. No. 135,613
Int. Cl. B21f 3/04
U.S. Cl. 140—92.1 **1 Claim**



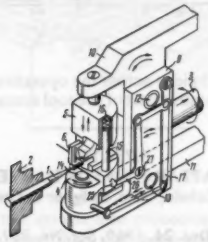
Apparatus for forming concentric, multi-turn, nested dynamoelectric machine field coils in which first and second concentric coil forms are provided each having first and second parts for respectively forming first and second opposite end portions of the first and second coils which are respectively connected by generally straight side portions. Each of the first parts comprises two elongated, spaced, parallel pins arranged to form generally straight first end portions of the respective coil, each of the second parts being laterally spaced from the respective first part thereby to form the side portions of the respective coil. Each of the second parts has a first section comprising two elongated, spaced, parallel pins and a second section comprising two elongated, spaced, parallel pins spaced from the first section pins on the side thereof remote from the respective first part and parallel with the first section pins. The pins of each of the second parts are arranged in a pattern to form the second end portion of the respective coil with generally straight side sections respectively joined to the respective side portions and converging to and joining a generally straight end section parallel with the first end portion.

3,734,146

METHOD OF WINDING HELICAL SPRINGS AND DEVICE FOR EFFECTING THE SAME

Ravil Nigametzhanovich Nazyrov, ulista Gagarina, 63, kv. 36, and Rinad Fatkhrakhmanovich Kavirov, ulista Saidasheva, 42, kv. 7, both of Kazan, U.S.S.R.

Filed Feb. 25, 1971, Ser. No. 118,636
Int. Cl. B21f 3/02
U.S. Cl. 140—71 R 6 Claims



The winding of helical springs is effected by bending successive portions of a wire by segments of a circle. In order to form the above segments, the successive portions of the wire are squeezed on a support, in which case the wire and the support are mutually rotated and displaced forward. The wire should be squeezed by striking the wire or subjecting the wire to impacts in the same place of the support.

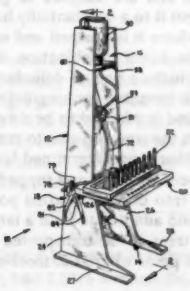
The method is carried into effect by a device having a support and a striker reciprocating relative to the support. The striker is mounted with a gap relative to the support and the wire is fed into this gap during the operation of the device. Thus, the striker strikes the wire periodically to form the segments, from which the coils of the spring are then formed.

3,734,147

MANUAL SYRINGE FILLING APPARATUS

Robert A. Borutta, Maryland Heights, and Elmer A. Koenig, Kirkwood, both of Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Mar. 17, 1971, Ser. No. 125,269
Int. Cl. B65b 3/14
U.S. Cl. 141—27 4 Claims



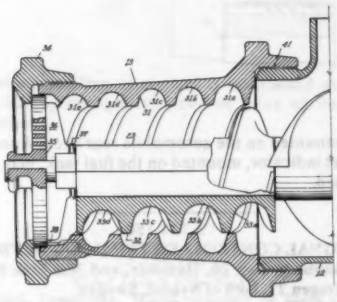
A syringe filling apparatus consisting of an upright frame having a platform for supporting a tray adapted to hold a plurality of syringe cartridges in either a horizontal storage or vertical filling position, there being provided below the platform a manually operated squeeze bubble defining a pump for pressurizing a removable medicament unit. The medicament unit includes a flexible outlet tube from a disposable medicament bottle having a nozzle at the end of the tube. A pinch-type handle valve is fixed to the end of the flexible outlet tube adjacent the nozzle that may be manually grasped and actuated to fill each of the cartridges supported on the tray on the work supporting platform.

3,734,148

GRINDER

Wayne A. McCulty, 918 East Franklin Street, Troy, Ohio

Filed Oct. 15, 1971, Ser. No. 189,524
Int. Cl. B02c 18/30
U.S. Cl. 241—82.1 16 Claims



A grinder having a pair of interconnected separated feed casings. One of the pair of casings (i.e. the inlet casing) is substantially cylindrical and is connected to the inlet hopper. The other casing (i.e. the outlet casing) tapers externally and in one sense internally from a relatively large diameter at the inlet end to a relatively small diameter at the outlet end. Each of the casings is fitted with an axial worm for advancing material such as for example meat supplied to the inlet casing through the inlet hopper and for moving it towards the outer end of the inlet and towards and into and through the outlet casing. The outlet casing is provided with an axial worm which moves the material through that casing to a cutting knife which is associated with a cutting die at the outer end of the outlet casing. There are means for simultaneously driving both of the worms as well as the cutting knife. The worms are both formed with a non-circular longitudinal opening such as a square opening or hexagonal opening or a half-round opening. A non-cylindrical shaft fits in the openings and extends through both worms for driving the worms. The cutting knife is also driven from the outlet casing worm. The two casings may be pivotally connected together or may be threadedly connected. The outlet casing is provided with at least one continuous internal spiral of which the flutes are progressively shallower from the inlet end to the outlet end (three spirals are shown). The worm in the outlet casing has flutes which decrease in depth progressively from the inlet end to the outlet end. However, the flutes in the worm can, if desired, be constant. An automatic shut-off of power may be provided which shuts off the motor whenever there is a no-load condition.

3,734,149

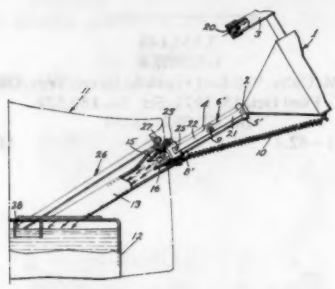
REFUELING SYSTEM FOR AUTOMOBILES

William B. Hansel, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 30, 1970, Ser. No. 85,563
Int. Cl. B65b 1/04
U.S. Cl. 141—350 3 Claims

A "tight-break" gravity refueling system for automobiles may include a normally closed valve in the fuel tank fillpipe which is opened by the insertion into the fillpipe of a rigid dispensing tube end, a portable fuel receptacle having a rigid

dispensing tube end and equipped with a self-closing valve, and a combination sight glass-vent tube coupled to the fuel



tank and mounted on the automobile rear deck. Another type of fuel level indicator, mounted on the fuel tank, may be alternatively used.

3,734,150

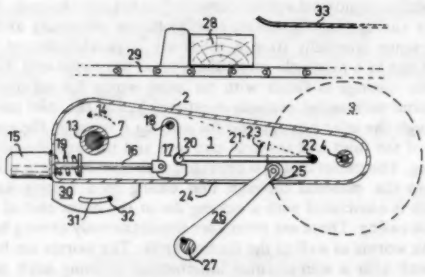
SIGNAL CONTROLLED TRIMMING DEVICE

Bo F. Holmberg, Box 20, Hammar, and Nils Erik Hellstrom, Strandvagen 21, both of Nyland, Sweden

Filed Sept. 1, 1971, Ser. No. 177,015

Int. Cl. B27b *5/06*

U.S. Cl. 83—474 **1 Claim**



Lumber cutting device having plurality of selectively operable saw units each including an arm carrying the saw at one end and being swingable about a shaft at its other end. The shaft is motor-driven and a transmission is provided between the saw and the shaft. The saw units are located beneath a conveyor for the lumber and means are provided for selectively raising a desired saw unit into cutting relationship. Each saw unit has a signal operable latch means cooperating with lifting means designed to raise a given saw unit only when its latch means is set in an active, fixed state.

3,734,151

PORTABLE WORKBENCH

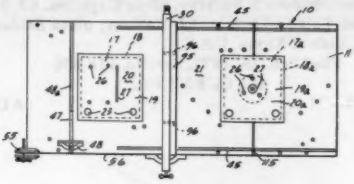
Harold O. Skripsky, 4296 Fox Meadow S. E., Cedar Rapids, Iowa

Filed Sept. 21, 1970, Ser. No. 73,717

Int. Cl. B27c *9/00*; **B27b** *5/16*

U.S. Cl. 144—1 R **3 Claims**

A portable collapsible workbench having openings through the top to receive tool base plates, the workbench having associated therewith workpiece fence guides for aligning the workpiece and a workpiece support for positioning a workpiece along an edge of the table top, the tools being positiona-



ble to move a workpiece across the operative part of the tool or to move the operative part of the tool across the workpiece.

3,734,152

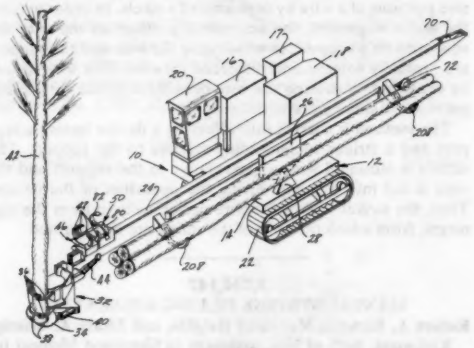
METHOD AND APPARATUS FOR HARVESTING TREES

Dean W. Shields, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 24, 1969, Ser. No. 887,903

Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **20 Claims**



A novel combination delimber and top shear utilized as an integral part of tree harvester. The tree harvester incorporating the delimber and top shear unit of this invention includes a horizontally oriented mast which is mounted on a mobile vehicle. A butt shear and felling grapple are pivotally mounted at one end of the mast and are adapted to grasp and sever a standing tree and pivot it to a substantially horizontal position overlying the mast where it is grasped and securely held by a transfer grapple. The novel combination delimber and top shear unit, which includes a pair of delimber arms and a pair of top shear blades, is mounted for longitudinal movement on the top of the mast and is adapted to be driven along the tree to strip all limbs from the tree and also to remove the top portion of the tree at either a predetermined length or diameter. After the tree has been delimbed and topped, it is dropped by the transfer grapple into collection arms positioned at intervals along the mast and adapted to hold a large number of delimbed and topped trees to be transported by the tree harvester to a collection point where the trees are deposited in a stack.

3,734,153

AUTOMATIC CABINET MAKING TOOL

James C. Reed, 5750 W. Pierson, Phoenix, Ariz.

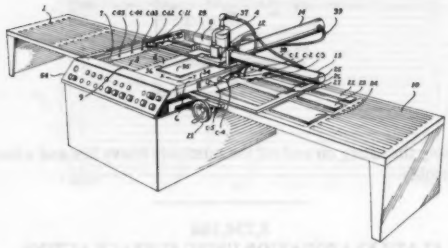
Filed Dec. 17, 1971, Ser. No. 208,760

Int. Cl. B27c *5/02*; **B27m** *3/18*

U.S. Cl. 144—326 **12 Claims**

Method and apparatus are disclosed for cutting one or more apertures in a cabinet front blank. The cutting operation is

performed by a router selectively extending into and out of the cabinet front blank. The movement of the router in the X and Y axes is controlled by air operated mechanisms. A plurality of mechanical switches responsive to movement and position of the router provide feedback signals to a pneumatic control



system. The control system also processes command signals from manual controls, which command signals provide direct control over the cutting operation of the router. The number, size and spatial relationship of the apertures may be programmed by the manual controls.

3,734,154

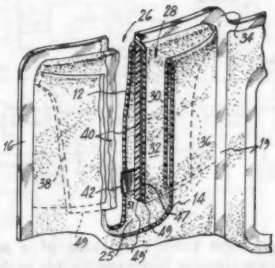
DISPOSABLE BAG WITH SELF-CLOSING VALVE

Edgwin R. Polk, Fords, N.J., assignor to Packaging Associates, Inc., Elizabeth, N.J.

Filed Apr. 23, 1971, Ser. No. 136,978

Int. Cl. B65d *33/16*

U.S. Cl. 150—9 **13 Claims**



A disposable enema bag has an extension for use in filling the bag and a self-closing valve therefor. The valve includes a tube and a semi-rigid panel attached at diametrically opposed portions of the tube with a flexible band secured at its opposite ends to the panel for bowing the panel and urging it into engagement with the tube to hold the opposed interior surfaces of the tube in fluid tight engagement.

3,734,155

MULTIPLE POCKET CARD HOLDER

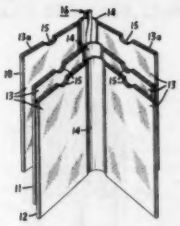
Hanns G. Stenger, 70-11 34th Avenue, Jackson Heights, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,155

Int. Cl. A45c *11/18*

U.S. Cl. 150—39 **5 Claims**

A multiple pocket card holder is provided having means wherein a plurality of card holding members can be nested one within the other within a cover member and firmly and securely retained in this relationship by means of a clip member which frictionally engages flexible hinge members of the card holders between the legs of the clip member. The clip member is formed to provide an elongated line of contact between portions of its opposing legs which engage the flexible hinge members and is of resiliently deformable material so



that the elongated line of contact is maintained as the clip member slidably engages one, two or more of the flexible hinge members.

3,734,156

SELF LOCKING NUTS

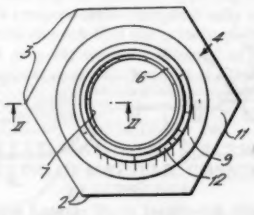
Albert Beard, Pembroke, Wales, assignor to Firth Cleveland Extrusions Limited, Pembroke, Pembrokeshire, Wales

Filed June 15, 1970, Ser. No. 46,436

Claims priority, application Great Britain, June 16, 1969, 30,455/69

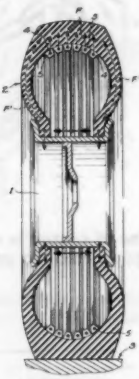
Int. Cl. F16b *39/284*

U.S. Cl. 151—21 B **4 Claims**



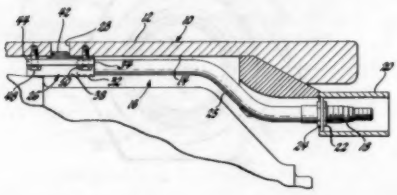
An all-metal self locking nut with a polygonal nut body, a crown extending from the non-bearing end of the nut body, and a screw-threaded bore extending through the nut body and crown. The crown has a frustoconical surface defined by a straight line revolved around the axis of the nut at a predetermined angle to that axis and extending from the side of the nut body to a region at or near the emergent periphery of the nut bore at the crown. This frustoconical surface is interrupted by an annular ledge or recess preferably produced by an axial punch prior to the threading of the nut bore, and having a flat base extending in a plane parallel to the bearing end of the nut body and perpendicular to the axis of the nut and an inner surface at right angles to the flat base. Subsequent to the threading of the bore, it is deformed inwardly within the crown by symmetrically arranged indentations in the region of the annular ledge or recess. Each of the indentations has in axial section a surface inclined to the nut axis at an angle smaller than the said predetermined angle of the frustoconical surface. The indentations may be produced by an axial die having a plurality of strike surfaces for formation of the indentations with intermediate relieved portions.

3,734,157
VEHICLE TIRE
V. Alfredo Roque, Apartado: 952, Managua, Nicaragua
Filed June 17, 1970, Ser. No. 46,846
Int. Cl. B60c *3/00, 9/22*
U.S. Cl. 152—354 **4 Claims**



A vehicle tire having annular wire or rod strengthening contained in a plurality of separate ridges on the inner surface of the casing.

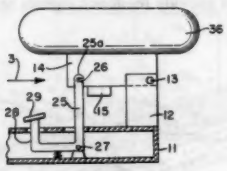
3,734,158
VALVE STEM ASSEMBLY FOR A TUBELESS TIRE RIM
Frank C. Bennett, and Gerardus L. Felix, both of London, Ontario, Canada, assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 4, 1971, Ser. No. 186,034
Int. Cl. B60c *29/00*
U.S. Cl. 152—427 **2 Claims**



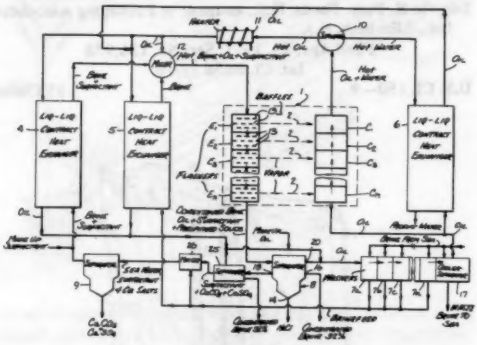
A valve stem assembly for use with a vehicle rim which supports a tubeless pneumatic tire. The rim includes a cylindrical body portion having an outer face for supporting the tire and has a valve stem hole through which pressurized air is directed for inflating the tire. The valve stem assembly includes an adapter which is mounted to the inner face of the rim and includes externally accessible fasteners so that the adapter can be removed from the rim and rotated 180° without removing the tire from the rim.

3,734,159
TIRE CHANGING DEVICE
William L. Schultz, Box 485, and Matthew Schultz, Box 241, both of Red Lake Falls, Minn.
Division of Ser. No. 726,414, May 3, 1968, Pat. No. 3,543,829.
This application Aug. 31, 1970, Ser. No. 68,340
Int. Cl. B60c *25/00*
U.S. Cl. 157—1 **1 Claim**

A pivoted component is mounted on a base and carries an hydraulic motor and a gear train. The component is swung vertically to receive a tubeless tire and wheel and is then swung horizontally for tire removal and replacement thus obviating the lifting on and off the relatively heavy tire and wheel assembly.



3,734,160
FLASH EVAPORATION USING SURFACE ACTIVE AGENT AND IMMISCIBLE LIQUID
Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.
Filed May 15, 1970, Ser. No. 37,530
Int. Cl. B01d *1/00;* **F26b** *7/00;* **B01d** *3/00, 3/10;* **C02b** *1/04*
U.S. Cl. 159—47 R **29 Claims**

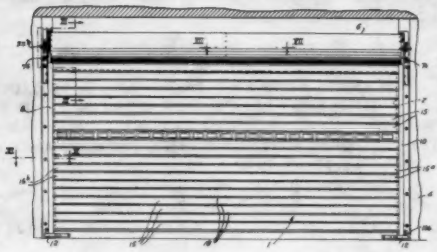


Flash evaporation from a mixture of a solution to be vaporized, a heat transfer liquid immiscible in the solution and a surface active agent capable of reducing interfacial tension between the solution (the dispersed phase), and the heat transfer liquid (the continuous phase), most of the surface active agent being salted out of the solution as the solution reaches higher concentrations but which agent is kept in dispersed suspension in the heat transfer fluid by agitation of the mixture, such suspension serving to maintain reduction of interfacial tension between the concentrated solution dispersed within the heat transfer liquid, and recovery thereafter of the surface active agent for reuse in the process.

3,734,161
DOOR CONSTRUCTION
Ernest E. Pierce, 9525 Whiterock Trail, Dallas, Tex.
Filed Aug. 26, 1970, Ser. No. 67,024
Int. Cl. E06b *9/08*
U.S. Cl. 160—133 **19 Claims**

An overhead door construction comprising a flexible door mounted on a spring loaded rotatable drum such that the door may be moved to open and close the opening. The door is constructed of panels having edges hingedly connected together, ends of the panels being locked together with keys and being slidable through a guide channel lined with sound deadening

material. A resilient wind baffle is secured to the door, and has free edges to allow the central portion of the baffle to spring



outward into sealing relation with the wall adjacent the top of the door. Wind locks prevent lateral deflection of the door.

3,734,162

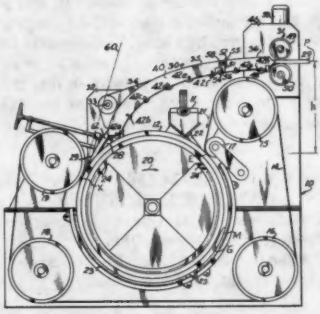
METHOD OF CONTINUOUSLY CASTING METALS

Enrique C. Chia; George C. Ward, and George E. Lenaeus, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 737,719, June 17, 1968, abandoned. This application May 17, 1971, Ser. No. 144,408

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **13 Claims**



A method of using a continuous casting machine having a casting wheel with a groove closed by a band to form a casting mold in which a conveying means conveys cast metal between the casting mold and a substantially horizontal path in a manner that reduces voids in the cast metal, that reduces the concentrations of dissolved gases in the cast metal, that increases the production rate of the casting machine, and that facilitates the initial removal of the cast metal from the casting mold while at the same time providing for convenient and efficient pouring of molten metal into the casting mold. Specifically, a conveying means is positioned and shaped to place the cast metal leaving the casting mold in a predetermined arcuate path which provides for relatively little vertical displacement of the cast metal above the casting wheel, which extends the length of the portion of the circumference of the casting wheel which may be used as the casting mold, which is a path into which cast metal leaving the casting mold will initially pass with a minimum of manual guidance, and which provides for the passage of the cast metal over pouring apparatus used for pouring molten metal into the casting mold.

3,734,163

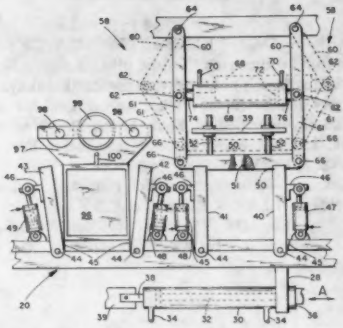
SAND MOLD FORMATION

Sam Larkin, 254 Beach 140th Street, Belle Harbor, N.Y.

Continuation-in-part of Ser. No. 114,993, Feb. 12, 1971. This application May 19, 1971, Ser. No. 144,823

Int. Cl. B22c *15/02, 25/00*

U.S. Cl. 164—187 **10 Claims**



Apparatus for forming sand molds comprising an elongate bed. The bed includes adjacent and partially enclosed receptacles for alternately receiving sand. A top cover plate is used for partially further closing the receptacles alternately. The top cover plate is operatively associated with the receptacles for alternately adjusting the configuration of the latter respectively from that configuration for operating on the sand disposed therein to form a mold to that configuration for releasing the mold so formed therein. A pair of opposing yet cooperable pattern plates are shiftably supported for entering together into each of the receptacles respectively, in opposing relation, to compact the sand disposed in the latter. A pair of mold ejectors are also utilized for entering into the receptacles alternately and ejecting the mold so formed in the latter along a pair of parallel endless lines in opposing directions. The elongate bed is reciprocatable longitudinally over a plurality of selected positions such that the pattern plates and ejectors can be aligned properly opposite selected of the receptacles alternately in operative association with the latter.

3,734,164

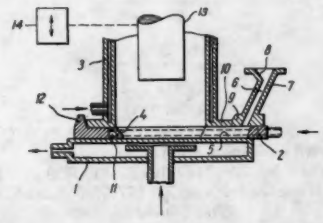
INSTALLATIONS FOR THE ELECTROSLAG REMELTING OF METALLIC CONSUMABLE ELECTRODES

Jury Vadimovich Latash; Boris Izrailevich Medovor, both of Kiev; Semen Abramovich Leibenzon, and Gary Petrovich Kaganovsky, both of Zaporozhie, all of U.S.S.R., assignors to Institut Electrosvarki Imeni Patona, Kiev, U.S.S.R.

Continuation of Ser. No. 669,608, Sept. 21, 1967, abandoned. This application July 16, 1971, Ser. No. 163,466

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **21 Claims**



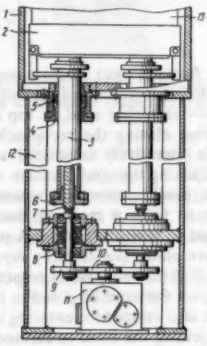
Apparatus and method for the electroslag remelting of metallic consumable electrodes comprising a bottom plate, a

discrete slag inlet means disposed on said bottom plate and a hollow mold disposed on the latter, said slag inlet means establishing fluid flow communication between said mold and an access port outside of said mold into which slag may be poured. A bottom pour apparatus useable in the foregoing. A removable slag inlet conduit in fluid-flow communication with the slag inlet in said slag inlet means.

3,734,165
INGOT EXTRACTING DEVICE

Konstantin Trofimovich Nautny, ulitsa Krasitskogo, 17, kv. 2; Viktor Iosifovich Lakomsky, ulitsa Bastionnnaya, 10, kv. 30; Anatoly Ivanovich Chvertko, bulvar Lesi Ukrainki, 2, kv. 36, all of Kiev; Semen Yakovlevich Shekhter, ulitsa Brestskaya, 15, kv. 18; Alexandr Mikhailovich Reznitsky, ulitsa Kirova, 2, kv. 18, both of Kommunarsk Voroshilovgradskoi oblasti, and Viktor Romanovich Pilipchuk, ulitsa Mashinostroitelnaya, 12, kv. 4, Kiev, all of U.S.S.R.

Filed Dec. 15, 1971, Ser. No. 208,085
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **2 Claims**

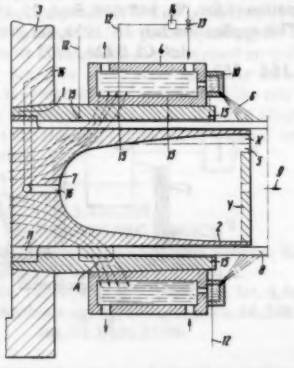


A device for extracting ingots from molds of plasma-arc furnaces in which a dummy bar is secured on at least two rods located symmetrically relative to a center of its cross-section.

3,734,166
APPARATUS FOR CONTINUOUSLY CASTING TUBES

Alfred J. Wertli, Poststrasse 15, 8406 Winterthur, Switzerland

Filed Aug. 6, 1970, Ser. No. 61,701
Claims priority, application Switzerland, Aug. 8, 1969, 12261/69
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **14 Claims**

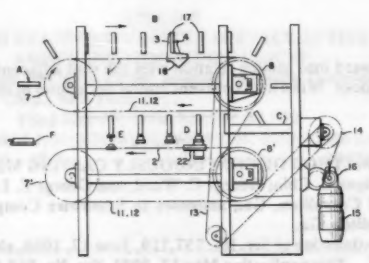


In apparatus for the continuous casting of tubing the core mandrel is hollowed for a portion of its length with the wall thickness of the hollowed portion progressively decreasing in the direction of withdrawal of the cast tube. The shape of the hollowed portion can be varied to control the flow of heat through the mandrel to produce the desired effect on the solidification process. A cooling fluid can be supplied to the mandrel cavity, if desired.

3,734,167
APPARATUS FOR ARRANGING AND SOLDERING TOGETHER ELECTRODE SETS FOR LEAD ACCUMULATORS

Tor Axel Odman, Stockholm, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Dec. 13, 1971, Ser. No. 207,336
Int. Cl. B22d *17/24*, *19/00*
U.S. Cl. 164—324 **12 Claims**

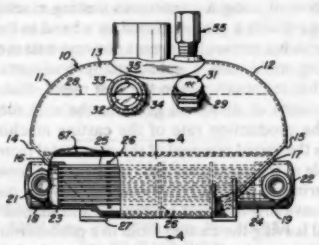


Apparatus for producing finished plate sets constituting a cell in a lead-acid accumulator. Positive and negative plate electrodes and separator sheets, in proper sequence and number, are fed in at station A, arranged and adjusted positionally relative to one another at station B, and inverted so that the plate lugs are fluxed at station C. The lugs are inserted into mold troughs carried by a lower chain system at station D, and the pole bridges with connecting terminals or external terminal posts formed integrally therewith during the travel to station E, after which the mold troughs are removed and the finished plate set is removed as a sub-assembly at station F.

3,734,168
WATER OR LIKE BOILER

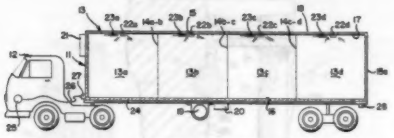
Raymond S. DeGroote, Centerville, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Dec. 3, 1971, Ser. No. 204,553
Int. Cl. F28d *11/00*
U.S. Cl. 165—11 **7 Claims**



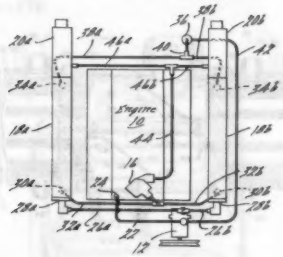
A water boiler type cooling device in which provision is made for continuing operation of the device despite temporary inverted attitude or negative gravity conditions of operation. Continuous venting without loss of liquid is provided for as well as means continuously to present liquid for vaporization at heated surfaces.

3,734,169
SPRAY REFRIGERATION SYSTEM FOR LOW TEMPERATURE-SENSITIVE PRODUCT
Henry Joseph Falk, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jan. 27, 1972, Ser. No. 221,316
Int. Cl. F25b 29/00
U.S. Cl. 165—28 13 Claims



A system for spray refrigeration of low temperature-sensitive products at optimized slightly above freezing temperature, but avoiding freeze damage at sub-freezing ambient temperatures, by introducing external heat in response to sensing of the ambient temperature.

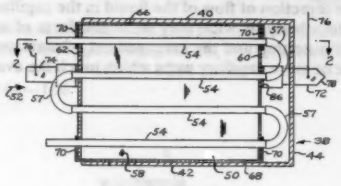
3,734,170
MARINE ENGINE COOLING
John G. Pace, Port Huron, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 24, 1971, Ser. No. 127,489
Int. Cl. F28f 27/02
U.S. Cl. 165—51 5 Claims



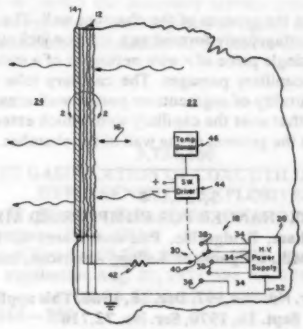
Improved water jacketed manifolds for marine engine cooling systems of the type wherein heated water which has circulated through an engine cooling system for cooling purposes is mixed in the improved engine exhaust manifold water jacket according to this invention with raw, relatively cool water to controllably cool the manifold and avoid condensing water from the exhaust gases flowing through the exhaust manifold.

3,734,171
COIL FOR AIR DUCT INSTALLATION
Roland A. Ares; Russell H. Bullard, and Ernest L. Spear, all of Wilmington, N.C., assignors to The Singer Company, New York, N.Y.
Filed Apr. 19, 1971, Ser. No. 134,952
Int. Cl. F24h 3/02; F16l 3/00
U.S. Cl. 165—54 12 Claims

A cartridge-type heat exchange coil installed in a conventional air duct by way of a single side opening in the duct wall so that the coil rigidly positions itself within the duct cavity. The coil preferably has certain arms extending from its ends to provide duct-side piercing, positioning, and suspensioning. The arms are disposed outside the duct when the coil is installed, such that wires or straps can be attached to the arms to suspend the coil without appreciably loading or stressing the duct.



3,734,172
ELECTROSTATIC CONTROL METHOD AND APPARATUS
Richard P. Clifford, Newport Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Jan. 3, 1972, Ser. No. 214,900
Int. Cl. F28f 13/00, 27/00
U.S. Cl. 165—96 8 Claims

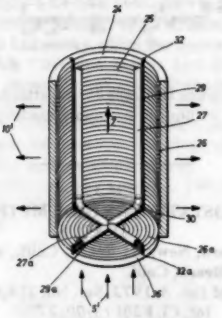


An electrostatic control method and apparatus wherein a potential difference is impressed across two or more electrically conductive members which are electrically isolated from one another to provide the adjacent members with opposite electrical polarity and thereby create an electrostatic force urging the members together against the resistance of an opposing resilient force. The potential difference is adjusted to effect relative positioning of the members through a range of positions under the conjoint action of the electrostatic force and the opposing force. The disclosed inventive embodiment is a thermal barrier composed of multiple thermal insulating layers which are electrostatically positioned to regulate the thermal conductance of the barrier.

3,734,173
ARRANGEMENT FOR TRANSMITTING HEAT
Konrad Gustav Moritz, 741 Reutlingen, Germany, assignor to Messerschmit-Bolkow-Blohm, GmbH, Munchen and Dr. K. H. Hocker, Stuttgart-Vaihingen, Germany, part interest to each
Filed Nov. 20, 1969, Ser. No. 878,280
Claims priority, application Germany, Jan. 28, 1969, P 19 04 105.5
Int. Cl. F28d 15/00
U.S. Cl. 165—105 13 Claims

An arrangement for transmitting heat using a tubular member defining a chamber in which an evaporable and

wetting liquid substance and at least one capillary body for conducting the liquid substance are present includes an inner wall having grooves defined therealong which extend crosswise to the direction of flow of the liquid in the capillary body. The capillary body or wick may be in the form of a narrow meshed wire netting and the arrangement advantageously includes one or more capillary webs which touch the evaporable



liquid present in the grooves of the chamber wall. The capillary body is advantageously formed as a tube or jacket, for example, from a single piece of a wire netting or of a metal sheet provided with capillary passages. The capillary body may be formed of a plurality of segments or partial wall areas which are joined together over the capillary webs which extend from the tubes out to the grooves of the wall of the chamber.

3,734,174

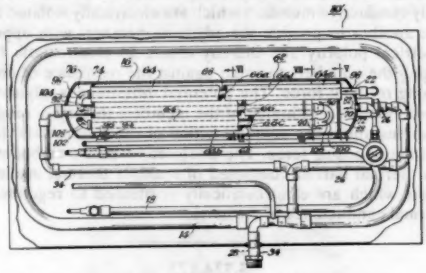
HEAT EXCHANGER FOR COMPRESSED AIR

Alden T. Bloxham, Bridgeville, Pa., and Harry C. Fischer, Royal Oak, Md., assignors to Kellogg-American, Inc., Oakmount, Pa.

Division of Ser. No. 784,597, Dec. 18, 1968. This application Sept. 16, 1970, Ser. No. 72,716

Int. Cl. F28d 7/10; F28f 1/20

U.S. Cl. 165—154 **13 Claims**



A heat exchanging structure for an evaporator and the like comprises a plurality of sheath tubes and a plurality of inner tubes inserted respectively and spacedly within the sheath tubes. A flow arrangement connects one group of the group of sheath tubes and the group of inner tubes in series and at least some of the other group of tubes in parallel.

In another such structure, inner and outer tubes are mounted in tube-in-tube relation, and at least one of the tubes include heat transfer spines.

3,734,175

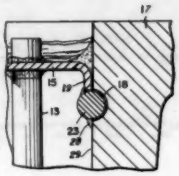
HEAT EXCHANGER

Donald W. Christensen, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed Aug. 30, 1971, Ser. No. 175,991

Int. Cl. F28f 9/16

U.S. Cl. 165—158 **5 Claims**



Apparatus, and method, pertaining to bonding tube-supporting plates to the end hubs of what commonly is designated as "Fixed Tube Bundle Heat Exchangers." A shell surrounds a tube bundle having a header plate at each end. The header plates are bonded to the ends of the shell by method and means of a snap ring anchored in the shell, with the plate on the snap ring. A ring of bonding material is then fused to the circumference of the plate at the shell interior and on the ring.

3,734,176

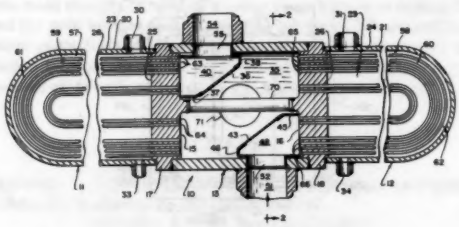
HEAT EXCHANGER ASSEMBLY HAVING A COMMON FLUID BOX

Waldo W. Hagnauer, 910 Keith Avenue, Waukegan, Ill.

Filed Apr. 16, 1970, Ser. No. 29,065

Int. Cl. F28f 9/02

U.S. Cl. 165—158 **10 Claims**



A plurality of heat exchanger units are joined together by a connecting member in an end to end relation. A fluid box is formed between the units by the walls of the connecting member and the tube sheets of the joined units. The fluid box serves as a passageway to conduct the heat exchange fluid between heat exchanger units. A tie-bar connected to the tube sheets of the individual heat exchanger units assists in containing the bending stresses exerted on the tube sheets by the pressure of the exchange fluid.

3,734,177

HEAT EXCHANGER

Louis Bellovary, and Al O. Popma, both of Union Grove, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

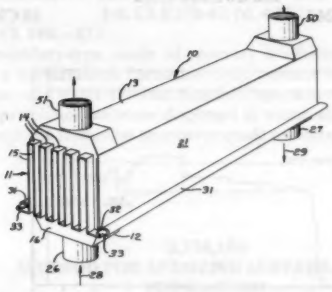
Filed Feb. 4, 1972, Ser. No. 223,464

Int. Cl. F28f 3/00

U.S. Cl. 165—166 **10 Claims**

A heat exchanger for exchange between first and second fluids such as motor oil lubricant and liquid coolant in which a baffle sheet of serpentine cross section separates these fluids for heat transfer through the sheet between the fluids, a pair of end plates on opposite ends of the exchanger each having

spaced fingers with edge areas joined to the baffle sheet sealing the end spaces between the sides of the folds forming the serpentine section with the end plates being parts of a first enclosing casing for the first fluid and with all seams joining the



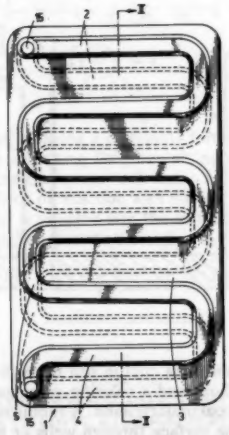
baffle sheet, first enclosing casing and the end plates being located at the exterior of the heat exchanger for ready inspection of the seams which are preferably formed by brazing and ready accessibility to the seams to make any necessary leakage repairs.

3,734,178

HEAT EXCHANGER

Edmond Soudron, Ans, Belgium, assignor to Etablissements Thomas Defawes, Rocour-Lez-Liege, Belgium

Filed May 26, 1971, Ser. No. 147,079
Int. Cl. F28a 3/12
U.S. Cl. 165—170 **4 Claims**



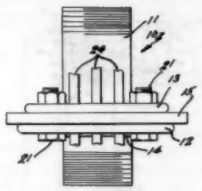
A heat exchanger, such as a boiler, comprising a nest of tubes travelled by a heat-bearing fluid, said tubes being branched on a starting header and on a return header of fluid, as well as a heat source for heating said fluid, this nest of tubes comprising ribbed elements, the ribs of which form communicating channels for the fluid and comprised of panels applied the one against the other and each presenting a ribbed profile, wherein the ribs of the panels forming each of the elements extend as serpentines, the ribs of one panel being offset with respect to the ribs of the other panel.

3,734,179

WELL PACKER & PUMP APPARATUS

William L. Smedley, 245 Graham Road NW, Grand Rapids, Mich.

Division of Ser. No. 844,333, July 24, 1969, Pat. No. 3,647,230. This application June 18, 1971, Ser. No. 154,464
Int. Cl. E21b 43/00
U.S. Cl. 166—106 **3 Claims**



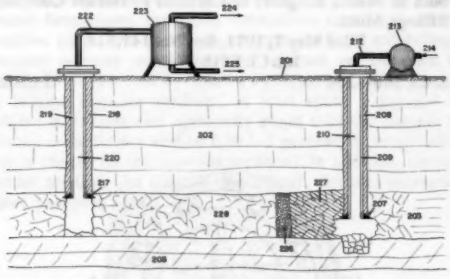
The disclosure is of a seal to be used in a well immediately above a pump and at or below the normal level of the water in the well casing to prevent the movement of water and air downwardly past the seal into the area of the pump. The seal is designed to permit the necessary service connections to be passed through it and then adjusted to tightly seal about these connections before installation of the seal in the well.

3,734,180

IN-SITU GASIFICATION OF COAL UTILIZING NON-HYPERSENSITIVE EXPLOSIVES

Vaughan W. Rhoades, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Division of Ser. No. 50,790, June 29, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,549
Int. Cl. E21b 43/24, 43/26
U.S. Cl. 166—259 **3 Claims**

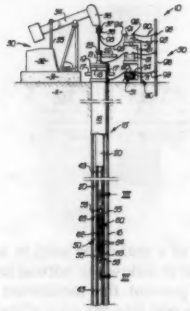


Two or more wells are drilled into a coal seam. The wells are completed so as to isolate all other strata from the coal seam and a radially extended horizontal fracture is directed by introduction of a non-hypersensitive explosive under hydraulic fracturing conditions so as to connect the wells communitively. The explosive is ignited so that a horizontally and vertically directed fracture network is formed within the coal system. A combustion front is ignited and propagated through the fractured network to produce combustible gases and coal tar liquids.

3,734,181
CORROSION REDUCING APPARATUS FOR A PRODUCING OIL WELL OR THE LIKE

Donald U. Shaffer, 8545 La Sierra Avenue, Whittier, Calif.

Filed Mar. 25, 1971, Ser. No. 127,921
Int. Cl. E21b *43/00*
U.S. Cl. 166—244 C 9 Claims

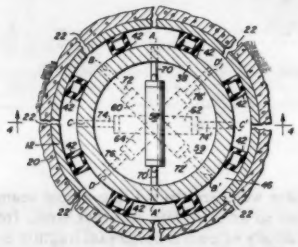


The corrosion reducing apparatus for a producing oil well has the positive terminals of three substantially discharged batteries connected respectively to the pump rod, the casing head, and the casing of the oil well; and has the negative terminals of the batteries connected to a rod driven into the ground. The pump rod is provided with a split zinc jacket around the short tube between pup joints, and a latch-on bow spring around the jacket to secure the jacket to the rod for insertion into a tube in the well whereupon the bow spring engages the tube to electrically connect the rod to the tube.

3,734,182
METHOD FOR LOCATING OIL AND GAS FIELD BOUNDARIES

Herbert G. Warren, Butte, and Ronald D. Ragland, Billings, both of Mont., assignors to Cardinal Petroleum Company, Billings, Mont.

Filed May 7, 1971, Ser. No. 141,314
Int. Cl. E21b *47/06*
U.S. Cl. 166—254 2 Claims

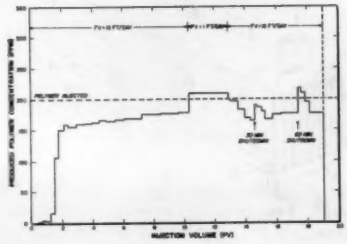


A method and apparatus for detecting the presence, direction of and the distance to barriers in underground oil and gas fields by directional flow data.

3,734,183
POLYMER FLOODING OBTAINED BY PULSE INJECTION

John S. Rhudy, Denver; James H. Fullinwider, Adams, and David J. Ver Steeg, Arapahoe, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 24, 1971, Ser. No. 156,273
Int. Cl. E21b *43/22*
U.S. Cl. 166—263 10 Claims

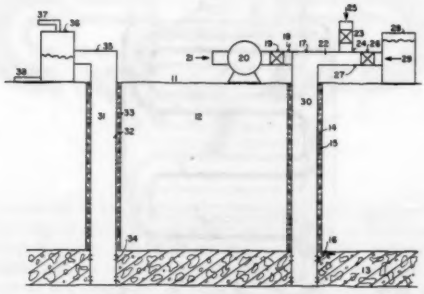


Secondary and tertiary recovery of crude oil via polymer injection is improved by injecting the polymer in a pulsating manner. This intermittently relieves the formation injection pressure, thereby releasing polymer entrapped in the sandstone matrix. This released polymer is effective in helping maintain mobility control throughout the completion of the polymer flood.

3,734,184
METHOD OF IN SITU COAL GASIFICATION

J. O. Scott, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed June 18, 1971, Ser. No. 154,371
Int. Cl. E21b *43/24*, *43/26*
U.S. Cl. 166—259 9 Claims



A method for distilling coal in situ through gasification to recover hydrocarbons and a calorific value gas by treating a rubblized bed of coal underground. A rubblized bed of coal is produced from the surface through wells or shafts sealed to convey fluids under high pressure to or from the coal bed. Superheated steam is injected into the chamber while volatized hydrocarbons and gaseous reaction products are simultaneously withdrawn. Subsequent to the removal of the volatile hydrocarbons, air is injected so as to initiate combustion of the remaining char and increase the chamber temperature to from about 1200°F. to about 2000°F. Air injection is then suspended with water or low temperature steam being introduced into the hot char in order to form superheated steam which is withdrawn and injected into a new rubblized chamber of coal to repeat the process.

3,734,185

USE OF WATER-EXTERNAL MICELLAR DISPERSIONS IN OIL RECOVERY

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 22,080, March 23, 1970, which is a continuation-in-part of Ser. No. 693,125, Dec. 26, 1967, Pat. No. 3,506,071. This application , Ser. No. 194,564
Int. Cl. E21b *43/16, 43/22*
U.S. Cl. 166—273 24 Claims

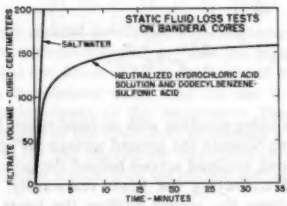
Secondary-type crude oil recovery is effected by injecting into a subterranean formation 1–20 percent formation pore volume of a water-external micellar dispersion of hydrocarbon and petroleum sulfonate dispersed in water and displacing it through the formation to recover crude oil therefrom.

3,734,186

METHOD FOR ACIDIZING SUBTERRANEAN FORMATIONS

Bert B. Williams, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Mar. 25, 1971, Ser. No. 127,897
Int. Cl. E21b *43/27*
U.S. Cl. 166—282 15 Claims



A method for acidizing a carbonate formation surrounding a well wherein a treating fluid containing an acid which on reaction with the carbonate rock forms a soluble salt and an organic acid which on reaction with the carbonate rock forms an insoluble salt is injected into the formation. An afterflush fluid is then injected into the formation to remove the insoluble salt.

3,734,187

OIL RECOVERY WITH SULFOMETHYLATED POLY (LOWER ALKYL VINYL ETHER/MALEIC ANHYDRIDE)

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 20, 1971, Ser. No. 210,203
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 7 Claims

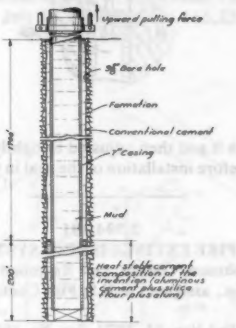
Poly(lower alkyl vinyl ether/maleic anhydride) copolymer is dissolved in ammonium hydroxide and reacted simultaneously with formaldehyde and sodium sulfite, e.g., for 10 hours at 50°C. to produce an improved thickening agent for secondary recovery of petroleum. Optionally the reaction with formaldehyde or with sodium sulfite can be omitted.

3,734,188

WELL CEMENTING AND STIMULATION METHOD

Roland L. Root, Tulsa, and Louis H. Eilers, Inola, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 42,758, June 2, 1970, Pat. No. 3,620,785. This application Apr. 29, 1971, Ser. No. 138,473
Int. Cl. E21b *33/14, 43/24*
U.S. Cl. 166—292 5 Claims



An hydraulic cement composition comprising an aluminous cement and an alum and method of cementing comprising admixing said composition with water and emplacing it in a geologic formation via a well penetrating the formation.

3,734,189

HYDRAULIC FRACTURING PROCESS USING A TEMPERATURE-INVERTED FRACTURING FLUID

William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 3, 1972, Ser. No. 215,095
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—308 15 Claims

Oil-external surfactant mixtures useful for fracturing subterranean formations, especially formations containing water-sensitive clays, and which are charactertistic of exhibiting a viscosity increase on temperature increase are obtained by mixing 25–95 percent by volume hydrocarbon, 1–70 percent by volume aqueous medium, at least about 3 percent by volume surfactant and optionally about 0.01–20 percent by volume cosurfactant and/or 0.001–5 percent by weight electrolyte (based on the aqueous medium). In addition, the surfactant mixture can contain silica flour, viscosity-increasing agent, propping agents, etc.

3,734,190

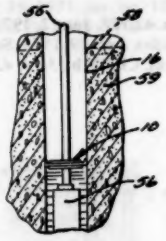
METHOD OF INCREASING CAPACITY IN A WELL

William L. Smedley, 245 Graham Road NW, Grand Rapids, Mich.

Division of Ser. No. 844,333, July 24, 1969. This application June 18, 1971, Ser. No. 154,461
Int. Cl. E21b *43/00*
U.S. Cl. 166—315 2 Claims

The disclosure is of a seal to be used in a well immediately above a pump and at or below the normal level of the water in the well casing to prevent the movement of water and air

downwardly past the seal into the area of the pump. The seal is designed to permit the necessary service connections to be



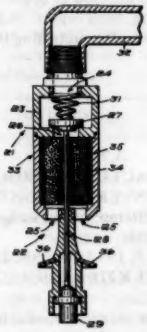
passed through it and then adjusted to tightly seal about these connections before installation of the seal in the well.

3,734,191

FIRE EXTINGUISHING SYSTEM

Wilfred V. Johnson, Oxford, and Raymond E. Shea, Holden, both of Mass., assignors to U.S. Fire Control Corp., Oxford, Mass.

Filed Nov. 15, 1971, Ser. No. 198,673
Int. Cl. A62c *35/22*
U.S. Cl. 169—5 18 Claims



Disclosed is an automatic fire extinguishing system with a temperature controlled sprinkler head assembly. Included within the head is a reservoir containing a chemical fire extinguishing agent that combines with fluid flowing therethrough to form a medium with superior fire extinguishing qualities. A valve within the sprinkler head automatically and repeatedly opens in response to conditions associated with a fire and closes in response to a change in those conditions.

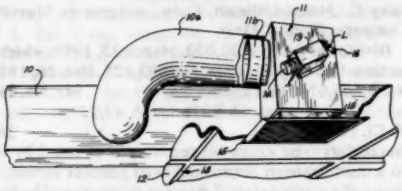
3,734,192

TEMPERATURE CONTROL TERMINAL UNIT

Frank James Dean, Jr., Kansas City, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Aug. 8, 1969, Ser. No. 848,496
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 5 Claims

A temperature control terminal unit includes a single-blade volume damper that is positionable by a motor driven operator in accordance with the temperature setting on a thermostat. The volume damper reduces the volume of air delivered to the area being conditioned as the temperature within same approaches a desired value. The unit is further characterized by its ability to utilize the proper volumetric proportions of air for either heating or cooling without upsetting the balance of air in the system and may include a remote supplementary



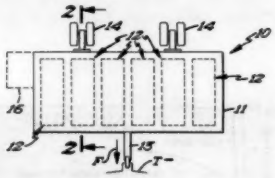
heating source energizable in accordance with the damper position.

3,734,193

SUGAR BEET HARVESTER

Erwin P. Molnau, deceased, late of Chanhassen, Minn., and by Margaret L. Molnau, administratrix, Route 5, Box 171, Excelsior, Minn.

Filed Sept. 20, 1971, Ser. No. 181,972
Int. Cl. A01d *25/04*
U.S. Cl. 171—57 7 Claims



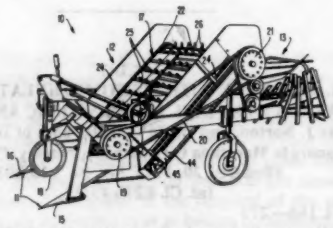
A beet harvesting machine with inclined rotary beet-digging points traveling beneath the ground surface for uplifting beets from the ground; inclined screws behind the points receiving, elevating and conveying the beets rearwardly; rotary helicoidal rods above the screws guiding the beets rearwardly; ground travel wheels supporting the digging points at desired depths of penetration; release gates adjacent the screws; and drive means for the screws and rotary helicoidal rods.

3,734,194

PEANUT SHAKER DIRT REMOVER

Carroll J. Whitfield, Columbus, Ga., assignor to Kelley Manufacturing Company, Tifton, Ga.

Filed June 1, 1971, Ser. No. 148,404
Int. Cl. A01d *17/08*
U.S. Cl. 171—101 4 Claims



A peanut shaker for use with plows and an inverter for harvesting peanuts, wherein mature peanut laden plants are simultaneously removed from adjacent rows of plants in the ground, elevated above the ground, shaken to remove the dirt

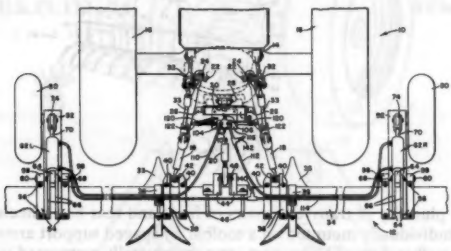
from the plants, and deposited back on the ground in a wind row. The shaker comprises a conveyor with rattler bars movable up an inclined path to move the plants from the plows to the inverter. Rattler bar elevating wheels are located between the upper and return flights of rattler bars and are arranged to be engaged by the rattler bars moving in the upwardly inclined direction of the upper flight so that the rattler bars and the plants carried thereby are jarred in an upward direction causing the dirt to be removed from the peanut plants.

3,734,195

SIDE DRAFT CONTROL SYSTEM FOR A TRACTOR AND EARTH-WORKING IMPLEMENT

John Isaac Cantral, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 17, 1971, Ser. No. 143,939
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 **15 Claims**



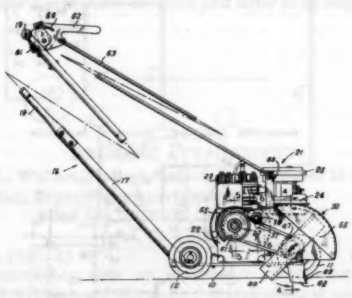
A side draft control device for wide implements automatically adjusts implement wheels to raise the high draft side of the implement and lower the low draft side of the implement to maintain a balanced draft load on the tractor and an average working depth of the implement. The system uses lateral movement of the draft links to operate a control valve which selectively and alternately interconnects the cylinders for the implement wheels with the tractor hydraulic pump and reservoir.

3,734,196

LAWN EDGER

Elmus F. Mangum, 200 N. Ravinia, Dallas, Tex.

Filed Sept. 3, 1971, Ser. No. 177,770
Int. Cl. A01d *35/00*
U.S. Cl. 172—16 **9 Claims**



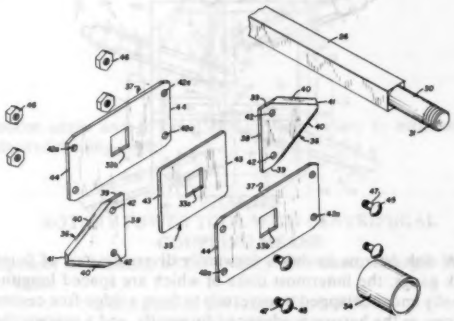
A frame, supported by front and rear wheels, has a gasoline powered motor rigidly mounted thereon with a horizontal drive shaft. The cutter carriage is in the form of a base plate rotatably supported on the motor drive shaft for vertical oscillating movement. The cutter blade is secured to a driven shaft rotatably supported at the front of the carriage about a horizontal axis disposed generally in the vertical plane of the front wheel axis. A carriage guide finger prevents engagement of the cutter blade with the edge of a pavement. The edger is maneuvered by a handle attached to the frame; and control means, operated at the handle, provide for positioning the height of the cutter blade relative to the supporting frame.

3,734,197

KNIFE STRUCTURE FOR A KNIFE REEL

Claude D. Zehrung, Jr., Englewood, Colo., assignor to Rental Equipment Manufacturing Co., Englewood, Colo.

Filed July 22, 1971, Ser. No. 165,235
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 **7 Claims**



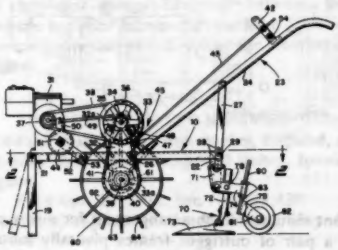
A knife structure for the knife reel of a turf conditioning apparatus which is mounted upon a square sectioned reel shaft. The knife structure uses replaceable sickle blades. The base of each blade is abutted against an end of a rectangular spacer plate so that the two blades extend from the plate in spaced opposition. A cover plate at each side of the spacer plate overlies the spacer plate and the base edge of each of the blades so that the spacer plate and the base portions of the blades are sandwiched between the cover plates. Holes at each end of the cover plates register with holes at the base of the cutter blades to receive bolts, and the assembly is secured together by tightening these bolts with nuts. A square opening extends through the cover plates and the spacer plate at the center of the knife structure, this opening fitting securely upon the square shaft. Tubular spacers threaded upon the shaft hold the assembly in position.

3,734,198

POWER PLOW

Stephen N. Coleman, 101 Lakeview Drive, Dothan, Ala.

Filed Jan. 6, 1971, Ser. No. 104,238
Int. Cl. A01b *69/00*
U.S. Cl. 172—258 **4 Claims**



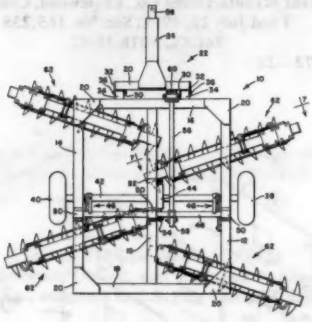
A power plow for producing a single furrow having a traction increasing drive wheel, a caster for aid in steering and varying furrow depth and a support stand for machine storage.

3,734,199

DISK HARROW WITH DISK GANGS SPACED LONGITUDINALLY AND OVERLAPPED TRANSVERSELY TO FORM A RIDGE-FREE CENTER

William Sadayuki Tsuchiya, and Thomas Burton Adams, Jr., both of Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Feb. 8, 1971, Ser. No. 113,456
Int. Cl. A01b 23/04
U.S. Cl. 172—551 4 Claims



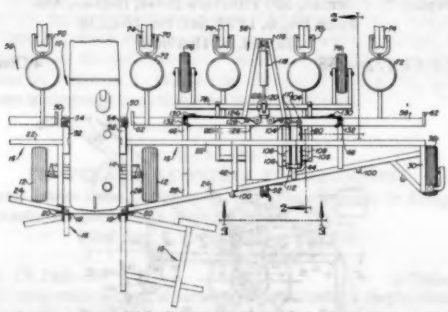
A disk harrow having a forwardly diverging pair of front disk gangs, the innermost disks of which are spaced longitudinally and overlapped transversely to form a ridge-free center furrow as the harrow is advanced forwardly, and a rearwardly diverging pair of rear disk gangs, the innermost disks of which are positioned adjacent to the opposite sidewalls of the center furrow formed by the front disks and spaced longitudinally to deflect soil into and thereby fill the furrow first from one side and then from the other as the harrow is advanced. The front pair of gangs are mounted on the harrow frame to yield inwardly upon striking a stump, rock, or similar obstruction, and the rear pair of gangs are mounted on the frame to yield outwardly upon striking such an obstruction.

3,734,200

HITCH ARRANGEMENT FOR FRONT MOUNTED AGRICULTURAL IMPLEMENT

Russell A. Miller, R.R. 2, Mendon, Ill.

Filed June 25, 1971, Ser. No. 156,677
Int. Cl. A01b 59/046, 63/106
U.S. Cl. 172—298 5 Claims



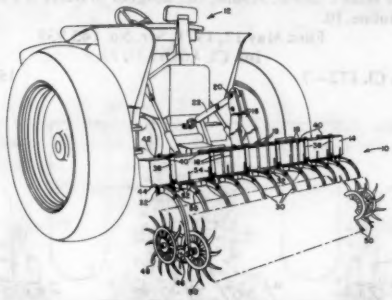
A front mounted hitch arrangement for a row crop tractor having a pair of outrigger frames pivotally mounted to be swung about a vertical axis from a working position to an over the road transport position. Pull type planter units are hitched to each outrigger frame by a pin and slot type hitch which provides for correct positioning of the planter units for planting and also for over the road movement. Roller type guides between the planters and frames prevent lateral sway while permitting vertical movement of the planters while traversing uneven terrain. A hydraulic cylinder and cable arrangement raises the planters off the ground to be supported by the outrigger frames during over the road transport.

3,734,201

ROTARY HOE

Richard David Zaun, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 19, 1970, Ser. No. 81,851
Int. Cl. A01b 21/02
U.S. Cl. 172—551 17 Claims



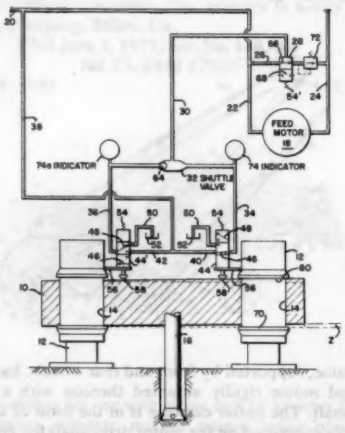
A plurality of transverse pairs of front and rear hoe wheels are individually mounted on a toolbar by spaced support arms and walker arms. The support arms are pivotally connected to the toolbar and extend rearwardly and downwardly therefrom and are normally urged downwardly by springs acting between the support arms and toolbar. The walker arms are pivotally mounted on the lower end of the support arms and rotatably carry a hoe wheel at each end. The structure permits the weight of the toolbar to be transferred to the rotary hoe wheels to provide a substantially constant and equal weight or downward force on each independent hoe wheel.

3,734,202

AUTOMATIC FEED CONTROL SYSTEM

Laszlo Gyongyosi, 137 Grove Avenue, Clarksburg, W. Va.

Continuation-in-part of Ser. No. 63,524, Aug. 13, 1970, abandoned. This application Mar. 12, 1971, Ser. No. 171,268
Int. Cl. E21c 5/11
U.S. Cl. 173—4 25 Claims



Excess feed pressure provided by the system raises a portion of the drilling machine from the ground and causes a sliding

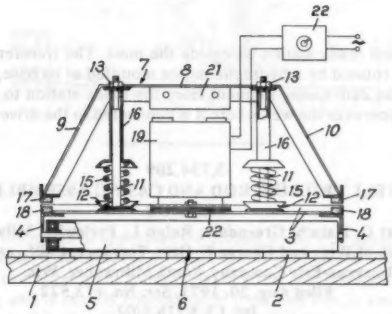
movement of a jack leg within a machine support frame. With jack leg movement, a sensor valve plunger closes on the frame, and the sensor valve controlled by the frame-engaging plunger in turn actuates a valve in the pressured fluid feed line to shunt the feed away from the feed motor. Excess feed pressure, capable of tilting the machine — to the jeopardy of the machine and its operator — is automatically attentuated in immediate response to a feed-reactive displacement of the machine.

3,734,203

MACHINE FOR STRIKING FLOOR COVERINGS

Lysiane G. Gelin, 31 Avenue Kennedy, and Sylvette M. Garrigue, 20 Rue L. Blanc, both of Narbonne, France

Filed Dec. 22, 1971, Ser. No. 210,746
Claims priority, application France, Dec. 23, 1970, 7047653
Int. Cl. E04f *21/20*
U.S. Cl. 173—24 **5 Claims**



This invention relates to a machine for striking floor coverings constituted by a chassis comprising two lateral stringers, a bridge disposed transversely to said chassis, means for abutment on the floor fixed to said lateral stringers, these means enabling the said floor to be struck and said chassis to be rendered horizontally movable, of at least one electromagnet composed of coils and moving elements, said coils being fixed to said chassis and said moving elements being integral with said bridge on whose ends two hammers are disposed, which strike vertically and periodically each of said stringers and at least two helical springs disposed between said chassis and said bridge in order to return said latter to its original position.

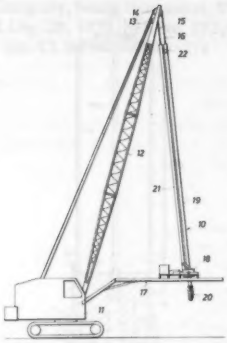
3,734,204

DRILLING ATTACHMENT

James L. Wallace, College Station, Tex., assignor to R. B. Butler, Inc., Bryan, Tex., a part interest

Filed Apr. 28, 1971, Ser. No. 138,167
Int. Cl. E21b *7/02*
U.S. Cl. 173—43 **12 Claims**

In accordance with an illustrative embodiment of the present invention, a drilling attachment for use in conjunction with a crawler or a truck mounted crane includes a frame assembly pivoted at one end to the crane at the base of the boom and extending horizontally outwardly, a drilling unit on the frame assembly and including a drilling rotary mounted for pivotal rotation about a horizontal axis that is transverse with respect to said frame assembly, and a lead beam for supporting the frame assembly and drilling unit from the boom of the crane, said lead beam being attached at right angles to said drilling rotary and arranged to tilt in reaction to changes in



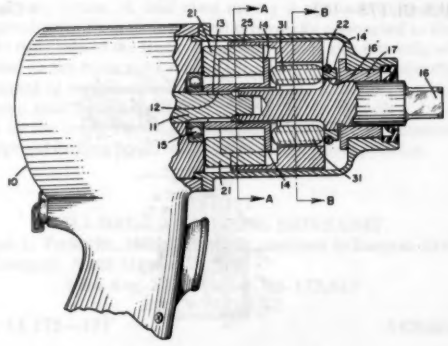
boom angle and to pivot said drilling rotary to establish a desired drilling angle.

3,734,205

ROTARY POWER TOOL WITH CENTRIFUGAL COUPLING MEANS

Spencer B. Maurer, 13753 County Line Road, Chargin Falls, Ohio

Filed June 4, 1971, Ser. No. 149,930
Int. Cl. B25b *19/00*
U.S. Cl. 173—93.5 **6 Claims**



This invention pertains to a rotary impact power tool, such as a wrench, and novel centrifugal coupling means therefor, wherein a motor drives a cage member which mounts an impact element between an outside positioned hammer member and an inside positioned output shaft having an impact-receiving jaw. Centrifugal means mounted between the cage member and the hammer member is operative periodically to force the hammer member ahead of the cage member to cause an impact blow.

3,734,206

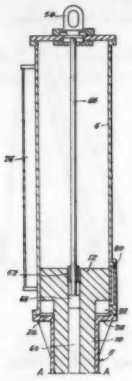
POWER-OPERATED HAMMER

Anthony Edward Walter Last, Stowmarket, England, assignor to The British Steel Piling Company Limited, Ipswich, Suffolk, England

Filed Apr. 29, 1971, Ser. No. 138,439
Claims priority, application Great Britain, May 4, 1970, 21,277/70
Int. Cl. E02d *7/12*
U.S. Cl. 173—137 **12 Claims**

A power-operated hammer has a fluid-pressure piston and cylinder arrangement for generating the working impulses.

The top of the piston fits an upper part of the cylinder to seal off a space such that the volume of the sealed space increases as the piston makes a return movement and a partial vacuum



is created so that the resultant air pressure acting on the piston accelerates the reversal of its movement and increases the cycle frequency.

3,734,207

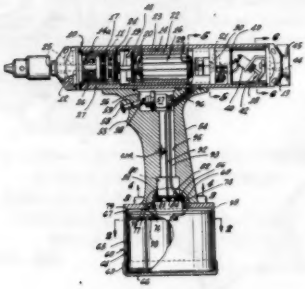
BATTERY POWERED ORTHOPEDIC CUTTING TOOL

Meyer Fishbein, 12020 Saltair Place, Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 212,484

Int. Cl. A61b *17/32*

U.S. Cl. 173—163 **8 Claims**



The invention provides a surgical electric power drill with self-contained batteries suspended from the butt end of a pistol grip handle in such an arrangement as to counterbalance the drill against top heaviness and toppling moments by locating the center of mass of the drill assembly within the pistol grip handle.

3,734,208

WELL DRILL TRANSFER MECHANISM

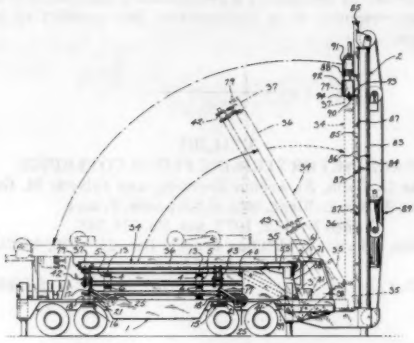
George E. Otto, Torrance, Calif., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 19, 1971, Ser. No. 173,197

Int. Cl. E21b *19/14*

U.S. Cl. 175—52 **5 Claims**

A mast extends vertically from the front of a truck, and supports a drive unit which operates to simultaneously drive a drill pipe and casing segment into a well. Drill pipe segments each with a surrounding casing segment are carried in a three tiered storage rack located along the right side of the truck. A selected drill-casing segment is discharged from the storage rack onto a pair of carriages which lift the selected drill-casing segment to a position where it is picked up by a transfer arm. The transfer arm is pivotally attached to the front of the truck and hydraulically actuated to lift the drill-casing segment to a



vertical ready station alongside the mast. The transfer arm is then rotated by a hydraulic motor mounted at its base, swinging the drill-casing segment from the ready station to a drive position over the well where it is connected to the drive unit.

3,734,209

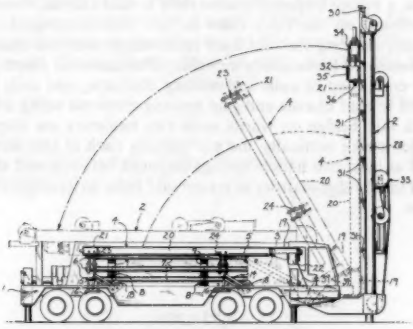
WELL DRILLING ROD AND CASING ASSEMBLING METHOD

Albert C. Haisch, Greendale; Ralph L. Perlewitz, Milwaukee, both of Wis., and George E. Otto, Torrance, Calif., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 20, 1971, Ser. No. 173,522

Int. Cl. E21b *3/02*

U.S. Cl. 175—57 **9 Claims**

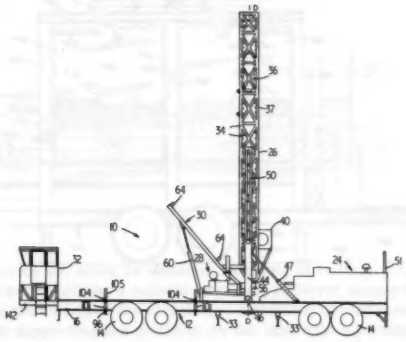


A mast extends vertically from the front of a truck, and supports a drive unit which operates to rotate a drill, to grasp a casing segment, and to simultaneously drive them into a well. Drill pipe segments each with a surrounding casing segment are carried in a storage rack located on the truck, from which they are selected and lifted by a transfer arm to a vertical ready station alongside the mast. In subsequent steps, the upper ends of the drill segment and the surrounding casing segment are attached to the drive unit, their lower ends attached to the drill pipe and casing segment in the well, and then driven downward. In addition to applying a downward feed on the drill string and casing, the drive unit vibrates the casing to speed its insertion into the well.

3,734,210
CARRIER MOUNTED DRILLING UNIT

Giles H. Wilderman, Calgary, Alberta, Canada, assignor to Kenting Drilling Ltd., Calgary, Alberta, Canada

Filed Apr. 20, 1971, Ser. No. 135,603
Claims priority, application Canada, June 15, 1970, 085475
Int. Cl. E21b *19/14*
U.S. Cl. 175—85 26 Claims

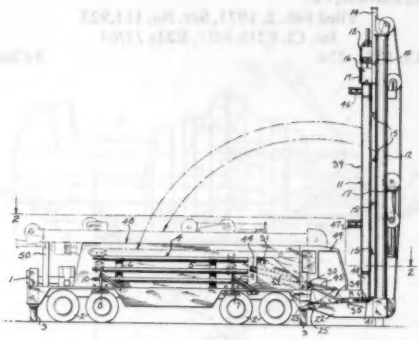


Improvements in apparatus for drilling wells. The apparatus is particularly suitable for drilling exploration holes or shallow production holes up to about 2,500 or 3,000 feet in depth. The drilling unit is readily transportable from one site to another and is capable of carrying, on racks provided for the purpose, all the drill pipe required for the drilling of relatively shallow production holes or exploration holes. The drilling unit, including the drill pipe racks, is preferably arranged such that a major portion of the weight of the complete drilling unit including a full complement of drill pipe supported on the drill racks is available to produce downward thrust of the drill bit when drawdown forces are being applied to the drill string. The power source, the drive train and the propulsion wheels are located adjacent one end of the chassis thereby leaving the central region of the chassis free of drive train components and the like. It is in this central region that the drill mast and its associated equipment is located. An operators' station is mounted on the chassis and means are provided to support the station for movement from a first position for transportation of the drilling unit wherein the operators' station overlies a portion of the racking area to a second operating position dispolaced outwardly of the racking area whereby a ready access may be had to the latter for addition or withdrawal of drill stem as the case may be. The apparatus also includes means for adding and withdrawing sections of drill pipe to and from the drill string including a pipe handling arm adapted to grasp and wing individual pipe sections between a generally upwardly directed position at or in the mast and a lower generally horizontal position. The apparatus includes storage means for the sections of drill pipe having a bed for supporting a plurality of layers of generally horizontally disposed pipe sections, the layers being in generally vertically stacked relation. Means are provided for raising or lowering the bed of the pipe storage means thereby to raise or lower the layers of pipe sections supported thereon to enable one of of said layers to be positioned adjacent the lower generally horizontal position taken by the pipe handling arm. Means are provided for individually transferring the sections of pipe from the storage means at the level of said pipe layer to the pipe handling arm for engagement thereby and vice versa.

3,734,211
MOBILE DRILLING UNIT

Albert C. Haisch, Greendale; Ralph L. Perlewitz, Milwaukee, both of Wis., and George Otto, Torrance, Calif., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 20, 1971, Ser. No. 173,519
Int. Cl. E21b *15/00, 19/14*
U.S. Cl. 175—85 10 Claims

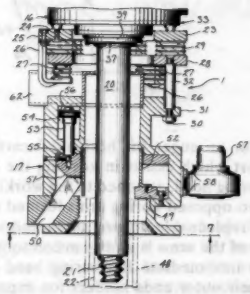


A mobile truck has a storage rack on the right hand half of the truck bed containing a selection of drill pipe and casing segments extending the length of the truck. On the truck bed along its left hand side is a house containing the machinery necessary to propel the truck and to provide hydraulic power to operate the various motors on the drilling rig. An operator's cab extends forward from the truck bed directly in front of the machinery house. A drill mast having a platform extending perpendicular from its lower end is pivotally connected to the front right side of the truck. A transfer arm is also pivotally attached to the front right side of the truck and is hydraulically operated to transport drill pipe and casing segments from the storage rack to a vertical drilling position underneath a drive unit on the mast. The mast is hydraulically operated between an upright drilling position and a horizontal travel position.

3,734,212
WELL DRILL AND CASING DRIVE UNIT

Ralph L. Perlewitz, Milwaukee, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 20, 1971, Ser. No. 173,523
Int. Cl. E21b *3/02*
U.S. Cl. 175—171 5 Claims



A drive unit attaches to the mast of a drilling rig and operates to simultaneously drill the well and insert a casing. Drill pipe segments are rotated by a spindle extending down from a rotary drive section which contains a hydraulic motor and transmission. A power chuck surrounds the spindle and operates to grasp and hold the upper end of the casing seg-

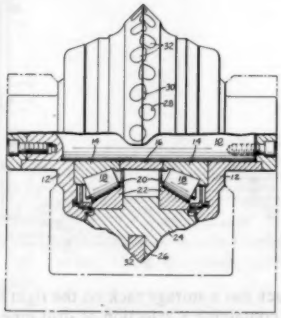
ment that surrounds the drill. The power chuck is resiliently mounted underneath the rotary drive section and includes a vibrator which when actuated aids insertion of the casing.

3,734,213

ROTARY CUTTER FOR EXCAVATION, ESPECIALLY FOR USE WITH RAISE BORING AND TUNNEL BORING MACHINES

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Feb. 2, 1971, Ser. No. 111,923
Int. Cl. E21b *9/22*; E21c *13/01*
U.S. Cl. 175—374 **3 Claims**



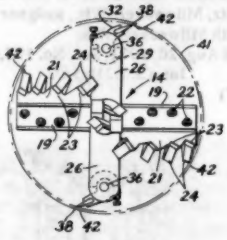
The specification discloses a rotary cutter in which a central support is mounted in a yoke or other supporting structure and which central support rotatably carries a cutting element having a central annular rib in which is mounted hard wear resistant inserts, such as cemented metal carbide inserts.

3,734,214

HEAD FOR HORIZONTAL BORING

John G. Benetti, Cupertino, and Walter L. Sturgeon, Los Altos, both of Calif., assignors to Pengo Corporation, Sunnyvale, Calif.

Filed Sept. 24, 1971, Ser. No. 183,326
Int. Cl. E21b *9/00*
U.S. Cl. 175—384 **4 Claims**



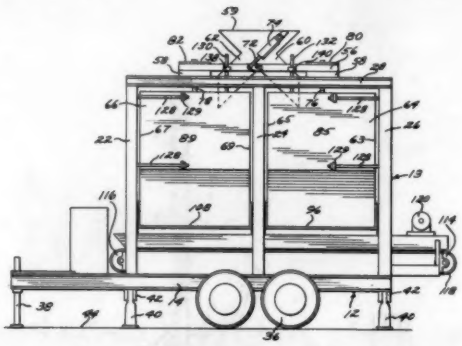
A head for an auger for horizontal earth boring has four point support which assists in keeping the hole round and in line. The boring head, attached to the working end of an auger shaft has two opposed boring arms formed with tooth holding sockets for replaceable digging teeth and also for a pilot bit. To the rear of the arms is an expansion tooth head having opposed arms intermediate the boring head arms. These arms carry on their outer ends holders for expansion teeth which pivot outward when the auger is rotated in one direction and inward when the auger is reversed. The expansion teeth and outermost boring head teeth are 90° apart and hence the head is supported so that its tendency to bore a hole which is elliptic toward the bottom is overcome. Further, adjustment is provided for the maximum extent of outward pivotting of the expansion tooth holder for different casing wall thicknesses.

3,734,215

CONTINUOUS FLOW SCALE WITH ALTERNATING VOLUMETRIC MEASURING AND WEIGHING CHAMBERS

James M. Smith, Golden, Colo., assignor to The Great Western Sugar Company, Denver, Colo.

Filed May 2, 1972, Ser. No. 249,733
Int. Cl. G01g *13/22*
U.S. Cl. 177—59 **4 Claims**



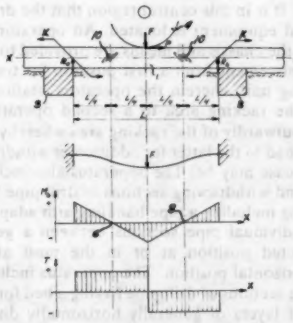
Weighing feeder type apparatus which comprises two containers from one of which material is discharged while the other is charged and automatic control means responsive to the charging of a predetermined volume of material to cause the charging action to be shifted from it to the now empty container and to discharge the filled one.

3,734,216

WEIGHING DEVICE

Kjell Helge Nordstrom, and Rune Nils Allan Flinth, both of Vasteras, Sweden, assignors to Conrail AB, Vasteras, Sweden

Filed Sept. 16, 1971, Ser. No. 181,031
Claims priority, application Sweden, Sept. 21, 1970, 1803/70
Int. Cl. G01g *19/08, 21/22, 3/14*
U.S. Cl. 177—136 **19 Claims**



A weigh device for static or dynamic weighing of railway guided vehicles comprising a weigh rail fixedly supported at both ends and strain gages positioned on the rail a predetermined distance apart and arranged such that the gages are essentially insensitive to bending moments and sense the strain in the rail in proportion to the shear forces imposed on the rail when a load is applied to the weigh rail.

3,734,217

WEIGHING DEVICE

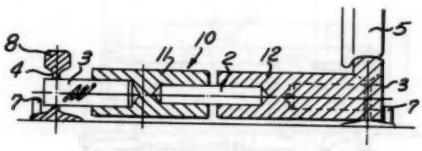
Rune Nils Allan Flinth; Nils Boran Ahl; Lars Herbert Larsson, and Kjell Helge Nordstrom, all of Vasteras, Sweden, assignors to Trancon AB, Vasteras, Sweden

Filed Sept. 16, 1971, Ser. No. 181,171

Claims priority, application Sweden, Sept. 21, 1970, 12804/70

Int. Cl. G01g 21/22

U.S. Cl. 177—163 22 Claims



A device for static or dynamic weighing of railway guided vehicles comprising a vehicle engaging platform adapted to engage the wheels of the vehicle and a plurality of load sensing devices supporting the platform on the rails with a portion of the supporting platform replacing a portion of the rails.

3,734,218

BALANCE

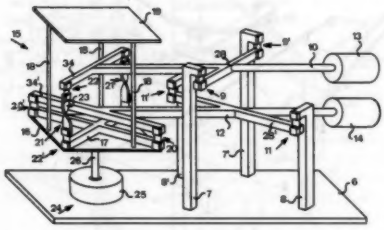
Walter Kupper, 8606 Greifensee, Switzerland, assignor to Mettler Instrument AG, Greifensee, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,758

Claims priority, application Switzerland, Dec. 21, 1971, 18608/71

Int. Cl. G01g 1/34, 7/00, 21/24

U.S. Cl. 177—203 9 Claims



A single-pan analytical balance having two beams mounted spacedly one above the other in main bearings whose normally horizontal axes perpendicularly intersect each other. One arm of each beam carries a counterpoise whereas the other arm is secured to a hanger assembly carrying a top-loading weighing pan by hanger bearings whose pivot axes are parallel to the corresponding main bearings. The bearings consist essentially of flexible metal ribbons. An electromagnetic device acting on the hanger assembly permits weighing by compensation in a known manner.

3,734,219

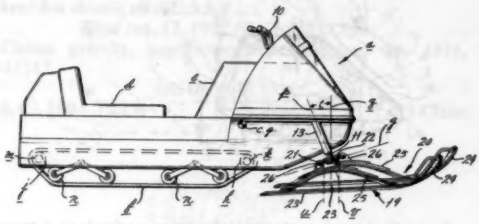
STEERING SYSTEM FOR SNOWMOBILES AND THE LIKE

Frank G. Christensen, Don Mills, Ontario, and Rafael T. Wulff, Bramlea, Ontario, both of Canada, assignors to Zeverly L. Lapin, Los Angeles, Calif., a part interest

Filed Aug. 11, 1971, Ser. No. 170,762

Int. Cl. B62m 27/02

U.S. Cl. 180—5 R 7 Claims



A steering system, uniquely suited for snowmobiles, banks the vehicle inward on turning, lessens destabilizing forces acting aft of the center of gravity, and affords steering stability to bring the vehicle out of turns.

3,734,220

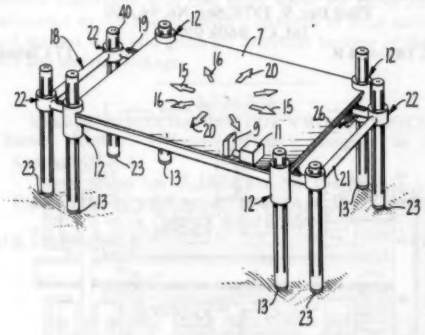
SELF-PROPELLED PLATFORM TOWER HAVING MECHANICAL AND HYDRAULIC SUPPORTING MEANS

Richard H. Smith, 411 Brannan St., San Francisco, Calif.

Filed Jan. 7, 1972, Ser. No. 216,102

Int. Cl. B62d 57/02

U.S. Cl. 180—8 E 4 Claims



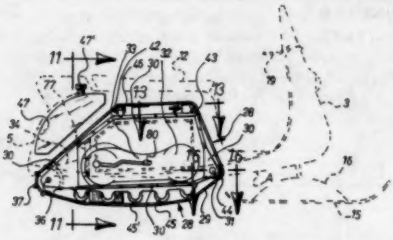
This invention relates to a deck or work platform of improved design supported so that it can be moved into a selected direction over the ground, both under water and on land. It may be used on the sea bottom, particularly at an offshore location and it may also be used on tundra, muskeg, swampy locations and the like. The improved tower of the present invention has combined mechanical and hydraulic support means and normally the hydraulic means would be used when moving the tower from one place to another while the mechanical support means would ordinarily be used after the tower was in a desired location.

3,734,221

ENDLESS TRACK VEHICLE

Richard L. Labelle, 405 Wood St., Sherbrooke, Quebec, Canada

Filed June 4, 1971, Ser. No. 150,155
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R **31 Claims**



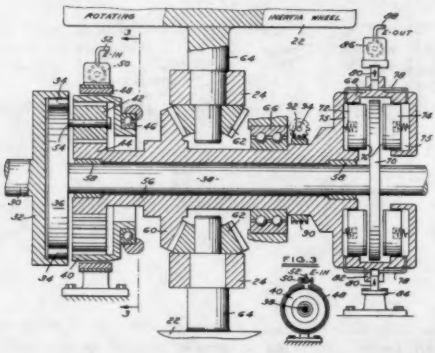
An endless track motor vehicle, more particularly a snowmobile, in which the engine and the transmission are surrounded by the endless track belt and the resulting assembly movably mounted within the vehicle chassis and suspended by spring and shock-absorbing means. The vehicle is also provided with a specially designed ski and with means to maintain the track bottom run in a curved shape to provide greater ease in steering, especially on a hard surface. The vehicle is much safer to operate than conventional snowmobiles, because the rubber endless track shields the passenger from the engine and associated moving parts, and because the vehicle has a lower center of gravity, effectively separates the gasoline reservoir from the engine and has its engine located behind and below the passengers, whereby the latter are not subjected to toxic exhaust gases. The snowmobile also has greater maneuverability, can be easily converted into a vehicle for summer use and can be easily taken apart for repair and the like.

3,734,222

INERTIAL ENERGY SYSTEM FOR VEHICLES

John Bardwick, III, 1733 West Ridge, Ann Arbor, Mich.

Filed Dec. 9, 1970, Ser. No. 96,460
Int. Cl. B60k 9/04
U.S. Cl. 180—54 R **17 Claims**



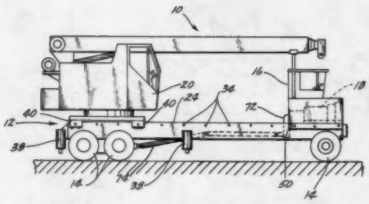
An inertial flywheel system for vehicles which includes clutch means for introducing energy to the flywheel from an engine or from a coasting or decelerating vehicle, and clutch means for transferring the stored energy to the vehicle on demand. A system of control is incorporated in the brake pedal, clutch pedal, accelerator and engine manifold. The control system operates the clutches in a manner which allows stored energy to be utilized to supplement the power plant of the vehicle and allows the kinetic energy normally lost in braking to be transferred instead to the flywheel. A speed control system transfers the braking function to the normal vehicle brakes when the quantity of stored energy reaches a predetermined maximum.

3,734,223

VEHICLE FRAME AND INTERCHANGEABLE COMPONENTS

Leonard E. Anderson, Box 31, Roland, Iowa

Filed June 29, 1971, Ser. No. 157,984
Int. Cl. B60k 5/10
U.S. Cl. 180—64 L **4 Claims**



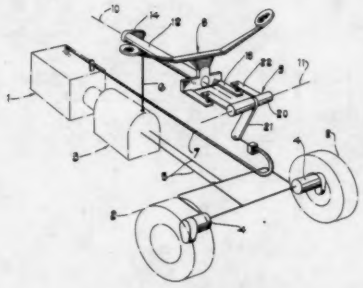
The present invention includes an elongated wheel-supported frame having forward and rearward ends. A motor unit is mounted on the frame by means of a bracket which slidably connects the unit to the frame for selective sliding movement forwardly and rearwardly on the frame. Locking pins are provided for locking the motor unit against sliding movement on the frame. Other brackets are slidably mounted on the frame for movably mounting other working components to the frame.

3,734,224

LOAD HANDLING VEHICLES

John Warrender Franklin, 14, Daintree Croft, Coventry, England

Filed Mar. 19, 1971, Ser. No. 126,066
Int. Cl. B60k 17/10
U.S. Cl. 180—66 R **7 Claims**



In a vehicle, primarily a load handling vehicle such as a fork lift truck, having a prime mover and ground-engaging wheels driven through a variable ration hydraulic transmission, a transmission ratio control is linked with a power output control of the prime mover to provide automatically an increase of the power output of the prime mover when the transmission ratio is varied to accelerate the vehicle. The transmission ratio control is operatively connected with a foot-operated rocker and the latter is linked with the power output control in a manner which provides an adjustable degree of lost motion so that the transmission ratio control is actuated before the power output control.

3,734,225

HYDROSTATIC DRIVE FOR A MOTORCAR

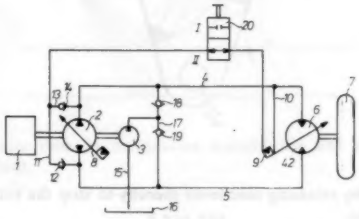
Walter Kobald, Stuttgart-Feuerbach, and Eckehart Reichel, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 5, 1971, Ser. No. 131,152

Claims priority, application Germany, Apr. 4, 1970, P 20 17 771.3

Int. Cl. B60k *17/16*

U.S. Cl. 180—66 R 7 Claims



A hydrostatic drive for a motorcar includes a transmission having a driven pump, a hydraulic motor, and first and second conduits connecting the same so that the first conduit has high pressure while the pump is driven by a prime mover, and has low pressure when the car rolls downward on a slope. Pressure responsive means are influenced by the high pressure in the first conduit to adjust the control means of the hydraulic motor, but stop adjustment of the control means when the car rolls, and is braked by the transmission.

3,734,226

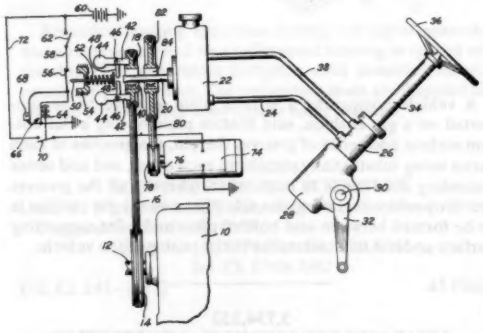
AUXILIARY ELECTRIC MOTOR DRIVE FOR POWER STEERING PUMP

Stanley I. MacDuff, Daytona Beach, Fla., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 25, 1971, Ser. No. 156,720

Int. Cl. B62d *5/06*; 180 *79.2 R*; 60 *525;6*

U.S. Cl. 180—79.2 R 5 Claims



In a vehicle having hydraulic power assisted devices such as power steering or a hydraulic power brake booster, an auxiliary pump drive comprising an engine driven belt drive including an over-running clutch connected to the pump, an electric motor driven belt drive including a second over-running clutch connected to the pump, and control means including the vehicle ignition switch and a switch operated by a centrifugal switch operating means mounted on and rotated by the engine driven pump pulley.

3,734,227

STEERING GEAR OF FOUR-WHEEL TRACTOR

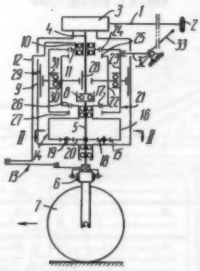
Grigory Tsai, "Kirda", Saime ulitsa Sadovaya, 10, kv. 12; Richard Fedorovich Perikov, "Kirda", Saime ulitsa Sadovaya, 13, kv. 4, both of Yangijul Tashkentskoi oblasti; Mikhail Stepanovich Pak, 4 Mikroraion, 42, kv. 56, Frunze; Saidikarim Sultanov, "Kirda", Saime ulitsa Tsentralnaya, 9, Yangijul Tashkentskoi oblasti; German Ivanovich Grishenkov, "Kirda", Saime, ulitsa Samarkandskaya, 72, kv. 9, Yangijul Tashkentskoi oblasti, and Kuchkarali Tulaganovich Shakirov, "Kirda", Saime ulitsa Sadovaya, 7, Yangijul Tashkentskoi oblasti, all of U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,520

Claims priority, application U.S.S.R., Jan. 29, 1971, 1613167

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 R 1 Claim



A steering gear wherein the steering shaft is alternately connected via a hydraulic servo unit and a shift coupling with a steering linkage and with a gear speed reducer installed on a shaft articulated to the front axle of the tractor.

The drive shaft is installed in the housing coaxially with a shaft connected with the front axle. The drive shaft carries a gear rigidly connected with the pitman arm while the other shaft carries a planetary speed reducer with an external gear. The shift coupling consists of two coaxial sleeves provided with gear rims at the end and interconnected for joint axial movement. The inner sleeve is installed on the drive shaft and meshes alternately with said gears while the outer sleeve is connected to the housing with a freedom of axial movement and meshes with said gears for alternate locking of the front axle and steering linkage.

3,734,228

STEERING MECHANISM FOR A ROAD VEHICLE

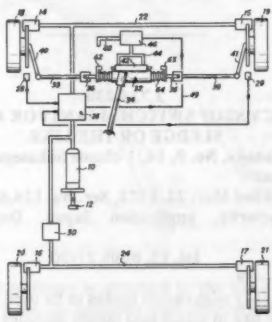
Charles Rivolier, 77-Cesson, France, assignor to Societe Anonyme D.B.A.

Filed Apr. 5, 1971, Ser. No. 131,199

Claims priority, application France, Apr. 17, 1970, 7013961

Int. Cl. B62d *15/00*

U.S. Cl. 180—82 R 4 Claims



Wheel angular displacement limiting device for a road vehicle adapted to normally limit the front vehicle wheel max-

imum angular displacement upon severe braking actuation.

Angular displacement limiting means are provided between a movable portion of the steering gear and a relatively fixed portion of the vehicle, and are actuated in function with a predetermined variable condition according to the vehicle braking to counteract a relatively large displacement of said movable portion of the steering gear upon severe braking actuation.

3,734,229

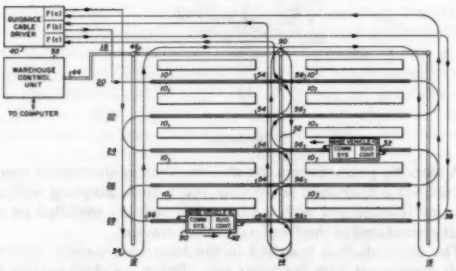
VEHICLE CONTROL SYSTEM

Donald T. Comer, Los Gatos, Calif., assignor to Mobility Systems, Inc., Santa Clara, Calif.

Filed Apr. 11, 1969, Ser. No. 815,467

Int. Cl. B62d *5/04*

U.S. Cl. 180—98 **4 Claims**



A vehicle control system for supplying vehicle control data or other communicative data to a plurality of vehicles which are constrained to transit a predetermined network of travel paths. An array of twin lead conductors are disposed beneath the surface of the travel paths and form a distributed antenna network. Vehicles passing along the transit paths are equipped with transmitting apparatus which uses the antenna network as a communicative medium for providing two way communication between a stationary control unit and the vehicle carried mobile control units. An array of single conductors is also disposed along the travel paths and are energized with a low frequency AC signal for developing magnetic fields which are detected by a vehicle carried guidance control unit for guiding the vehicle along a particular path.

3,734,230

EMERGENCY STOP SWITCH MEANS FOR A MOBILIZED SLEDGE OR THE LIKE

Yoshiyuki Tanaka, No. 9, 14, 1-chome Sakasegawa, Takarazukashi, Japan

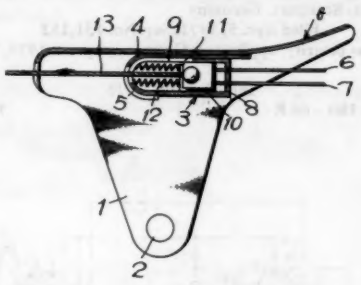
Filed Mar. 22, 1971, Ser. No. 126,635

Claims priority, application Japan, Dec. 17, 1970, 45/114378

Int. Cl. B60k *27/00*

U.S. Cl. 180—99 **4 Claims**

An emergency stop switch means to be used for a mobilized sledge or the like in which said means includes a throttle lever for operating a carburetter and mounted on a handle portion, said throttle lever being provided with a contact point wherein it is short-circuited to stop the rotation of an engine in the manner that in an emergency said contact point is closed



merely by releasing said lever thereby to stop the rotation of an engine.

3,734,231

TRANSPORT MEANS OR VEHICLE, OR A FLUID BED

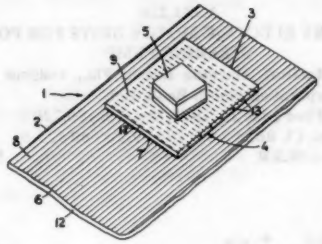
Robert De Vries, 2 Valeriusstraat, Hague, Netherlands

Filed Mar. 10, 1971, Ser. No. 122,873

Claims priority, application Netherlands, Mar. 16, 1970, 7003680

Int. Cl. B60v *1/04;* **B65g** *7/06*

U.S. Cl. 180—125 **1 Claim**



A vehicle comprising a bottom plate adapted to be supported on a gas cushion, said bottom plate having a flat bottom surface and series of grooves therein, the grooves of each series being substantially parallel to each other, and said series extending at an angle to each other, whereby all the grooves are in open connection with each other when a gas cushion is to be formed between said bottom plate and a flat supporting surface under it to facilitate the initial raising of the vehicle.

3,734,232

APPARATUS FOR SEISMIC WAVE DETECTION

Floyd Shepherd, Jr., Bartlesville, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

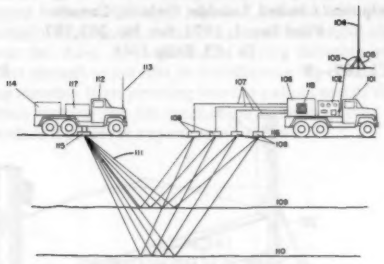
Filed Sept. 10, 1970, Ser. No. 70,974

Int. Cl. H01g *1/32;* **G01v** *1/00*

U.S. Cl. 181—.5 VM **5 Claims**

Noise in the continuous transmitting and recording of seismic signals produced by radio frequency and other transmitter interference appearing on the seismic amplifiers is reduced by removing the sending antenna from the recording vehicle, such that the antenna is placed a predetermined distance from the recording vehicle. This improvement upon

the transmitting-receiving apparatus reduces the noise interference to an insignificant level and allows exact recordation



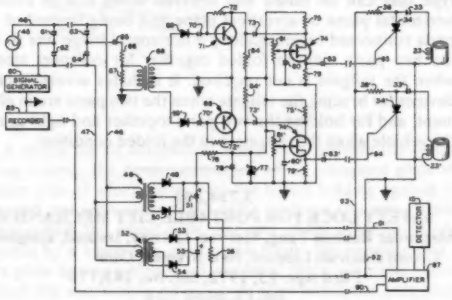
of seismic data in continuous transmitting and receiving equipment.

3,734,233

SONIC LOGGING APPARATUS

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1969, Ser. No. 862,849
Int. Cl. G01v *1/40*
U.S. Cl. 181—.5 AG **5 Claims**



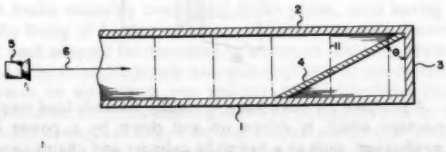
Acoustical logging apparatus having two signal generators and a receiver carried by an elongated housing in spaced relationship. The generators comprise coils mounted on magnetostrictive members. The connecting leads are disposed outside the coils to avoid stray signals being induced.

3,734,234

SOUND ABSORPTION STRUCTURE

Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 8, 1971, Ser. No. 196,616
Int. Cl. E04b *1/82*
U.S. Cl. 181—33 G **43 Claims**



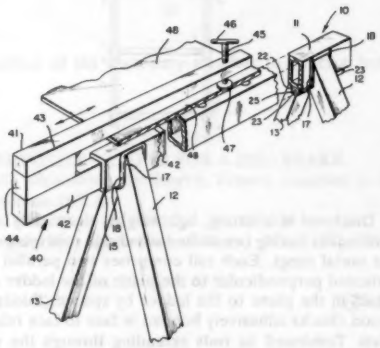
A sound absorbing structure, generally comprising a honeycomb-like cellular layer, an impermeable backing closing one end of the cells, a permeable facing covering the other end of the cells, and oblique porous or permeable partitions having a specified flow resistance in each cell, for providing controlled acoustic absorption over a wide range of frequencies and having a minimum ability to wick and retain liquids. The operation of the structure is relatively independent of the materials from which it is made, and may for example be fabricated entirely from metal. It is particularly suitable for sound attenuation in jet engines and other adverse environmental conditions requiring sound absorptive panels, baffles, duct liners, and duct splitters.

3,734,235

COLLAPSIBLE SAWHORSE

John E. Lanier, Miami Beach, Fla., assignor to Lanier Enterprises, Inc., Cocoa, Fla.

Filed Apr. 16, 1971, Ser. No. 134,807
Int. Cl. B25h *1/06*, *1/08*
U.S. Cl. 182—153 **13 Claims**



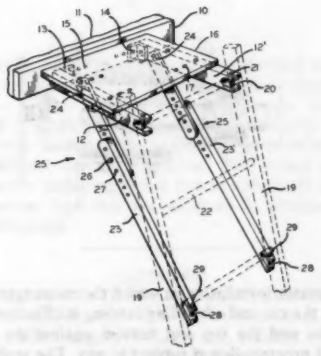
An elongate beam having a pair of generally parallel legs extending transversely from opposite beam ends, and an additional pair of legs each hingedly connected to the beam adjacent one end thereof for swinging movement between collapsed and set-up positions.

3,734,236

ADJUSTABLE LADDER PLATFORM

Gerald Houtler, 9708 W. Thurston Avenue, Milwaukee, Wis.

Filed Dec. 16, 1971, Ser. No. 208,592
Int. Cl. E06c *7/16*
U.S. Cl. 182—121 **5 Claims**



A stand off platform is attached to the top of a ladder to hold it away from an adjacent wall. The platform supports tools, paint cans, and the like. A suitable cushion on the edge of the platform keeps it from marring the wall.

3,734,237

LADDER

Charles I. Howard, Mercer Island, Wash., assignor to Howard Manufacturing Company, Kent, Wash.

Filed Mar. 16, 1971, Ser. No. 124,773
Int. Cl. E06c 1/08, 7/08
U.S. Cl. 182—216 **11 Claims**

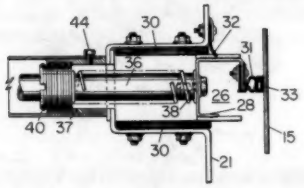
Disclosed is a strong, lightweight, electrically nonconductive ladder having two slotted wood side rails spanned by tubular metal rungs. Each rail comprises two parallel wood slats oriented perpendicular to the plane of the ladder and spaced apart in the plane to the ladder by spaced, thin, rectangular wood chocks adhesively bonded in face to face relation to the slats. Tensioned tie rods extending through the rungs compressively hold the rungs socketed anti-rotationally in and between the side rails in an integral structure resistant to racking, bending or torsional strain.

3,734,238

ELEVATOR INSTALLATION WITH SEALED PASSENGER PASSAGEWAY

Anthony Vincent Secresty, Parma, and Edward Benedict Grabowski, North Olmstead, both of Ohio, assignors to Otis Elevator Company, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,104
Int. Cl. B66b 9/00
U.S. Cl. 187—1 **8 Claims**



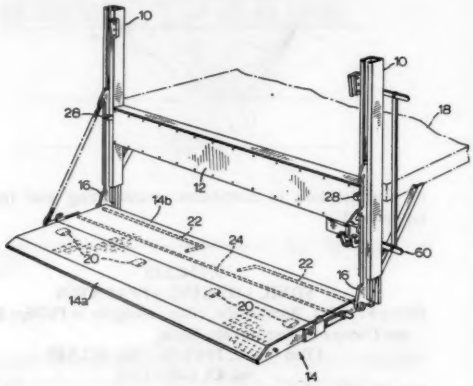
An elevator installation in which the passenger passageway between the car and a building landing is effectively sealed on both sides and the top and bottom against the entrance of wind and precipitation if subject to any. The seals for the top and bottom are retractable and include magnetized gaskets. Those for the sides are non-retractable and include baffles which present tortuous paths to the passage of wind and precipitation, if any.

3,734,239

SELF STORING VEHICLE LOADING PLATFORM

Paul H. Martin, Toronto, Ontario, and William C. McKee, Willowdale, Ontario, both of Canada, assignors to Diesel Equipment Limited, Leaside, Ontario, Canada

Filed Dec. 1, 1971, Ser. No. 203,787
Int. Cl. B60p 1/44
U.S. Cl. 187—9 **8 Claims**



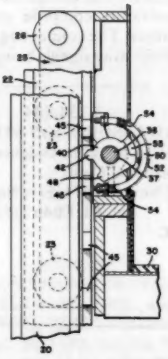
A powered tailgate for a vehicle, the tailgate being of the type that can be raised and lowered when it is in either a horizontal plane or a vertical plane and being formed of two parts connected together along a horizontal hinge line so that the two parts may be folded together for compact storage when the tailgate is not required. It includes several locking devices for bracing the tailgate when the two parts are in alignment, and for holding the two parts together and tight against the vehicle when the tailgate is in the folded condition.

3,734,240

SAFETY LOCK FOR PORTABLE LIFT MECHANISM

Alexander Reuben Tang, Mervue, Galway, Ireland, assignor to Crown Controls Limited, New Bremen, Ohio

Filed Apr. 13, 1972, Ser. No. 243,775
Int. Cl. B66b 5/16
U.S. Cl. 187—89 **3 Claims**



A portable lift truck has a vertically movable load receiving carriage which is driven up and down by a power drive mechanism, such as a hydraulic cylinder and chains connecting a cylinder to the lift carriage. In the event of a malfunction of the lift mechanism, such as due to chain breakage or a major hydraulic failure, the lift mechanism is prevented from

free falling beyond a predetermined speed. Equally spaced stop lugs on the mast are engaged by an arm on a rotatable stop member which is spring loaded to dump rotation of the stop member when the arm engages the stop lugs. If the relative speed between the stop lugs and the rotatable member substantially exceeds the maximum rate of movement obtainable from the drive mechanism, the spring damping will not react fast enough to prevent an interference lug on the rotatable stop member from jamming into the path of one of the stop lugs, thus locking the lift mechanism against further movement before it achieves any excessive speed.

3,734,241

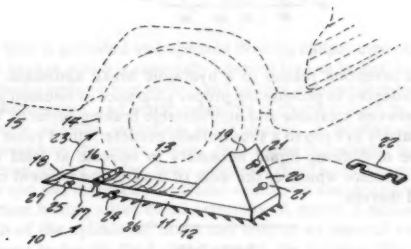
DRIVE ON NO SLIP BLOCK

Chester A. Hale, Yucaipa, Ycaipa, Calif.

Filed Aug. 30, 1971, Ser. No. 176,183

Int. Cl. B60t *3/00*

U.S. Cl. 188—32 **1 Claim**



A chock for an automobile wheel so to prevent the vehicle from rolling, the device consisting of an elongated plate the under side of which have teeth for firmly holding against the ground, the upper side of the plate having a concave channel upon which the wheel rolls, one end of the plate being connected by a hinge to a gang plank block, the opposite end of the plate having a stop block mounted there upon and against which the automobile wheel abuts after which the gang plank block is upwardly pivoted against the wheel and secured by a brace to prevent the wheel from rolling off again.

3,734,242

ANNULAR, ANTIPODAL, RELATIVELY-SEPARABLE BRAKE

Hermann Klaue, Tour D'Ivoire 24e, Montreux, Switzerland

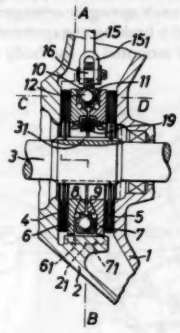
Filed Apr. 15, 1971, Ser. No. 134,270

Claims priority, application Germany, Apr. 18, 1970, P 20 18 928.4; July 28, 1970, P 20 37 273.0; Sept. 7, 1970, P 20 44 241.5; Sept. 7, 1970, P 20 44 240.4; Oct. 8, 1970, P 20 49 459.1

Int. Cl. F16d *55/04*

U.S. Cl. 188—71.4 **9 Claims**

A brake assembly comprising brake plates, each having a brake lining of friction material at least on one side thereof, and each adapted for mounting on a shaft or axle to be braked so as to be rotatable jointly with said shaft or axle and movable towards or away from one another, brake operating rings disposed between the brake plates and mounted so as to be movable towards or away from one another and a ball or roller and ramp mechanism disposed between the brake rings said mechanism being operable to cause movement of the brake rings in directions opposite to one another so that each brake ring contacts an adjacent brake plate and moves the same in a direction towards an adjacent stationary member and bring the brake lining of each said brake plate into contact with a



braking surface of the stationary member to effect a brake operation.

3,734,243

COMPOSITE CALIPER FOR A DISC BRAKE

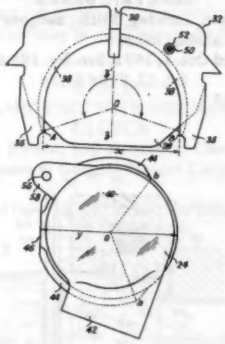
Jean-Claude Girauldon, Ponthierry, France, assignor to Societe Anonyme D.B.A.

Filed Mar. 18, 1971, Ser. No. 125,654

Claims priority, application France, Mar. 25, 1970, 7010686

Int. Cl. F16d *65/32*

U.S. Cl. 188—72.4 **5 Claims**



A disc brake for an automotive vehicle in which a two-piece caliper assembly is used. The first piece is the caliper body including the bridge portion that straddles the disc and is secured to a pair of arms that extend outwardly from the bridge portion, thereby forming a U-shaped member presenting an open-end between the arms. The second piece is a brake actuator including piston means slidable in a cylinder having circular lugs that are received in circular grooves formed in the arms.

3,734,244

ROLLER SKATE BRAKE FOR BEGINNERS

Robert L. Roddy, Route 3, Box 922, Boring, Oreg.

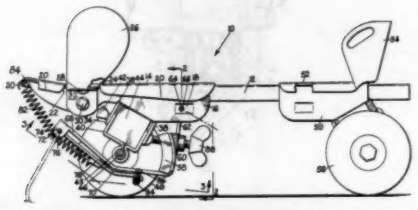
Filed Aug. 9, 1971, Ser. No. 170,237

Int. Cl. F16d *63/00*

U.S. Cl. 188—83 **1 Claim**

A roller skate brake controlling the free running speed of the skates to assist beginners in obtaining balance and agility on the skates. For this purpose, friction brake pads are

secured on a body member pivotally attached at one of its ends to the roller skate wheel supporting frame. The body member has a releasable lever connected to one end of a tension spring. The other end of the spring is connected to the skate frame, and such spring is arranged to urge the friction brake pads toward a braking engagement with the wheels. An adjusting screw is mounted in the body member and has engagement at one end with a skate portion for varying the extent of application of the brakes. The extent of braking to be applied to the wheels is pre-set by the beginner for the purpose of controlling the free running speed as desired. A plurality of spring connecting holes are provided in the lever to adjust the operating strength of the spring. In a modified form of the invention, the spring having the adjustment is connected directly to the body member.



3,734,245

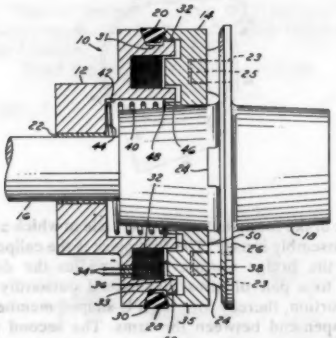
ELECTRIC BRAKE

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Oct. 1, 1971, Ser. No. 185,664

Int. Cl. F16d *65/34*

U.S. Cl. 188—163 **11 Claims**



A vehicle electric brake with stationary and axially moveable cores providing a V-shape annular recess receiving an endless belt providing a friction liner releasably urged into firm frictional engagement with the cores by an electromagnet mounted in the stationary core. The moveable core is mounted on a wheel hub for rotation therewith and axial movement with respect to the fixed core to engage the belt between the cores and thereby restrain rotation of a wheel on the hub to stop the vehicle.

3,734,246

HYDRAULIC BRAKE AUTOMATIC ADJUSTER

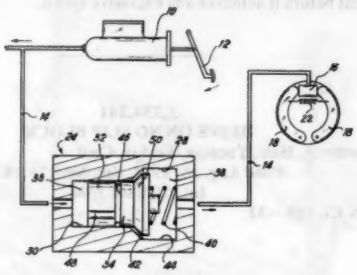
Pierre Montjourides, Saint-Maur, France, assignor to The Bendix Corporation, South Bend, Ind.

Filed June 23, 1971, Ser. No. 155,962

Claims priority, application France, June 25, 1970, 7023565

Int. Cl. F16d *65/74*

U.S. Cl. 188—196 A **2 Claims**



This invention relates to a hydraulic brake automatic adjuster adapted to provide the proper clearance in released portion between rotatable and nonrotatable braking surfaces, and particularly to keep to a substantially predetermined value the volume of braking liquid necessary to operate at least one brake actuator whatever the wear of the friction element connected thereto.

3,734,247

AIR COOLED BRAKE ASSEMBLY

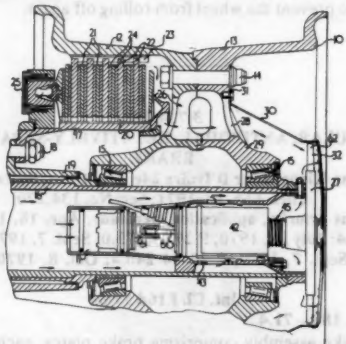
Stanley G. Buckley, Erdington, Birmingham 24, England, assignor to Dunlop Holdings Limited, London, England

Filed Nov. 19, 1971, Ser. No. 200,351

Claims priority, application Great Britain, Nov. 25, 1970, 56,002/70

Int. Cl. F16d *65/78*

U.S. Cl. 188—264 A **11 Claims**



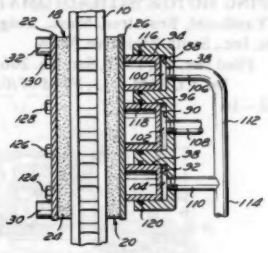
A wheel brake assembly comprising a wheel detachably mounted on an axle, a brake assembly disposed between the wheel rim and the axle, and an air impeller carried by and rotatably supported or a support member carried by the wheel, the arrangement being such that when the wheel and support member are assembled on the axle the impeller is rotatably drivable through a friction drive mechanism to pass a current of air through the brake assembly. Of which the following is a specification.

3,734,248

FLOATING CALIPER ASSEMBLY FOR DISTRIBUTION OF BRAKE SHOE THRUST IN DUAL HYDRAULIC BRAKE SYSTEM

Clarence C. Fay, 17211 Edgewater Drive, Lakewood, Ohio

Filed Dec. 1, 1971, Ser. No. 203,696
Int. Cl. B60t 11/20
U.S. Cl. 188—345 4 Claims



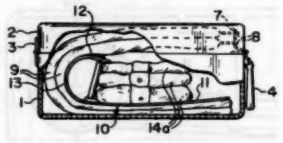
There is provided an improved floating caliper assembly for disc brakes which is especially adapted for use in dual hydraulic brake systems having first and second independent hydraulic subsystems, and which assembly is characterized by a stationary adaptor including guide means, a floating caliper mounted on the guide means, the caliper including a housing portion having at least three isolated cylindrical bores open at one end and disposed on parallel axes and a disc-spanning arm portion having a free distal extremity. A piston is mounted in each of the cylindrical bores and defines an internal variable volume hydraulic fluid chamber with the housing. The outer ends of the pistons extend beyond the housing. A first disc brake shoe is provided for coaction with one side of a disc and mounted on the free extremity of the disc-spanning arm. A second disc brake shoe is positioned for coaction with the opposite side of the disc and guided by the guide means for abutting coaction with the outer faces of the pistons. Introduction of fluid into the variable volume hydraulic fluid chambers causes the brake shoes to move in opposition to each other and clasp the disc therebetween for braking action. Means are provided for introducing fluid from separate hydraulic subsystems into the variable volume chambers in such a way that in the event only one subsystem is operative, the distribution of thrust through the caliper assembly is uniform.

3,734,249

SUITCASE DIVIDER

Ted Wilt, 1410 Hinman Avenue, Evanston, Ill.

Filed Sept. 3, 1971, Ser. No. 177,556
Int. Cl. A45c 5/12
U.S. Cl. 190—41 B 5 Claims



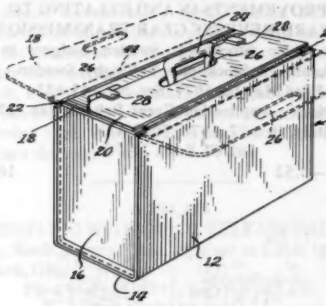
A divider for a suitcase for preventing suits and other normally hanging garments from becoming wrinkled comprises a U-shaped flexible wall member which establishes a gentle fold for the garments when the suitcase is closed. The base portion of this member contains offset apertures which frictionally engage the garments to prevent their sliding out of position during transit, and the roundness of the apex portion is controlled by a directing strut to assure the effectiveness of the divider irregardless of the degree of loading of the suitcase.

3,734,250

CARRYING CASE WITH FREELY HINGED CLOSURE

Mandel A. Doppelt, 7218 Kedvale Avenue, Lincolnwood, Ill.

Filed May 17, 1971, Ser. No. 144,010
Int. Cl. A45c 3/00
U.S. Cl. 190—48 6 Claims



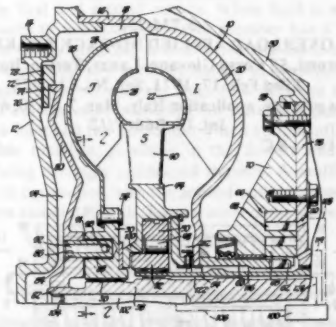
A carrying case with a freely hinged closure or flap wherein the hinge member which connects the closure flap to the side wall of the carrying case is formed of a strip or strips of flexible material with a longitudinal member, preferably circular in cross-section, longitudinally secured to the strip intermediate the opposite longitudinal edges of the strip wherein the strip forms a pair of hinge segments, with the longitudinal member forming a hinge line, with one segment connected to the side of the case and the other segment connected to the flap to provide a hinge member whereby the closure flap or flaps may be positioned in open position outwardly of the open end of the bag so as not to interfere with the opening and provide a maximum open surface for access into the interior of the bag. The longitudinal member may be rigid or may be flexible.

3,734,251

HYDRODYNAMIC UNIT WITH MECHANICAL DRIVE CLUTCH

Robert E. Annis, Howell, and Forrest R. Cheek, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1971, Ser. No. 200,007
Int. Cl. F16d 39/00
U.S. Cl. 192—3.3 5 Claims



This hydrodynamic unit has a friction clutch that is selectively engageable to establish a mechanical power path through the unit to improve power transmission efficiency under predetermined operating conditions. A clutch control chamber is automatically hydraulically connected to the torus chamber of the unit by special valve means to reduce clutch capacity to a point where the clutch does not transmit ap-

preciable torque in response to the transition from an engine drive condition to an overrun condition. With clutch capacity so reduced the backlash in the drive unit is effectively dissipated by the fluid in the unit and is not transmitted mechanically to the engine.

3,734,252

IMPROVEMENTS IN AND RELATING TO FORWARD/REVERSE GEAR TRANSMISSIONS

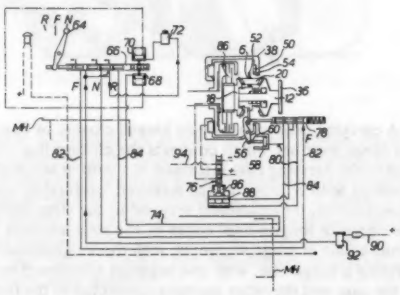
Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik AB, Stockholm, Vallingby, Sweden

Filed May 10, 1971, Ser. No. 141,633

Claims priority, application Great Britain, Jan. 27, 1971, 52,632/71; Italy, Oct. 27, 1970, 7059 A/70

Int. Cl. B60k *21/00*

U.S. Cl. 192—3.52 **16 Claims**



A forward/reverse gear transmission of the planet gear type including input and output members and a planet gear carrier and constructed to provide forward, reverse and release operation. The gear comprises a first, second and third coupling of which the first serves to connect and disconnect the input member and a driving source, the second serves to connect and disconnect the input and output members and the third clutch serves to selectively hold the planet gear carrier against rotation. The gear also includes a control means for allowing engagement of the first coupling only when the second clutch effects drive between the input and output members or when the third coupling holds the planet gear against rotation. Moreover, the gear includes means for controlling engagement of said second and third couplings so that only one of said couplings is engaged at any one time.

3,734,253

OVERLOAD APPLIED NO-BACK BRAKES

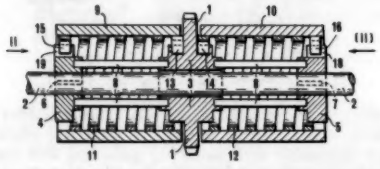
Piero Derossi, 55 Corso Giovanni Lanza, Torino, Italy

Filed Feb. 17, 1971, Ser. No. 116,022

Claims priority, application Italy, Mar. 7, 1970, 67774 A/70

Int. Cl. B60t *7/12*

U.S. Cl. 192—8 C **7 Claims**



A device intended for transmitting from a driving shaft to a driven member, in a bi-directional and non-reversible way, a limited torque, wherein said driven member, rotatably mounted on the driving shaft, is braked at rest by a bi-directional logarithmic brake, suppression means provide for suppressing the braking action upon rotation of the driving shaft, a torsion balance is provided for transmitting a torque under angular displacement from the driving shaft to the driven member, and reinstatement means reinstate said braking action when said angular displacement overcomes a predetermined limit angle.

3,734,254

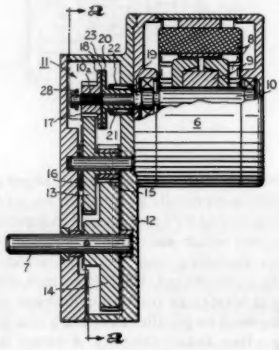
STEPPING MOTOR WITH AUTOMATIC BRAKE

Florian F. Yanikoshi, Braintree, Mass., assignor to Sigma Instruments, Inc., South Braintree, Mass.

Filed Dec. 10, 1971, Ser. No. 206,626

Int. Cl. B60t *7/12*; F16d *67/02*

U.S. Cl. 192—16 **1 Claim**



A motorized drive which will reliably turn a loaded output shaft in one direction and mechanically brake the shaft against all but intended reverse rotations includes an electromagnetic stepping motor having a threaded armature shaft carrying a pair of clutch discs, one of which is geared with the output shaft and is threadedly separable from and unitable with the other on the armature shaft, and a one-way brake of the overrunning clutch type which unidirectionally holds the other brake disc in relation to the motor stator or frame structure.

3,734,255

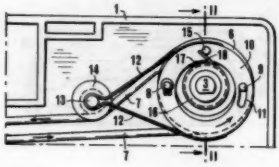
FRICTION COUPLING, PARTICULARLY FOR THE COLLECTING REEL OF A CINEMATOGRAPHIC PROJECTOR OF THE LIKE

Enrico Ferraris, Turin, Italy, assignor to Officine Precisione Luserna S.p.A., Turin, Italy

Filed Sept. 10, 1971, Ser. No. 179,489

Int. Cl. F16d *7/02, 41/20*

U.S. Cl. 192—36 **6 Claims**



An automatic friction coupling to be mounted between a driving member and a driven member, particularly the collecting reel of a cinematographic projector, wherein a slightly braked ring connected to the driving member is oscillable between two limit positions and carries an entrainment member suitable to engage in one of said limit positions, and to disengage in the other of said limit positions of the ring, with a tang of a resilient wire wound onto a shaft connected to

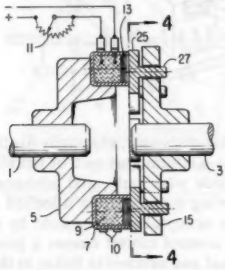
the driven member, thus entraining the driven member with a limited torque, in one direction of rotation, while leaving free said driven member in the opposite direction of rotation.

3,734,256

TORQUE TRANSMITTING DEVICE

William H. Compton, and John B. Desch, both of Brecksville, Ohio, assignors to Comptrol Incorporated, Cleveland, Ohio

Filed Dec. 6, 1971, Ser. No. 204,884
Int. Cl. F16d *27/07*
U.S. Cl. 192—84 A **13 Claims**



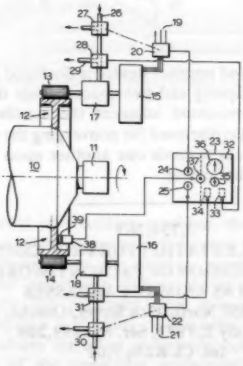
A magnetic friction device for transmitting torque from one to the other of spaced apart, relatively rotatable, axially aligned members. One of the members carries a circular band of friction material concentric with the axis of rotation of the member. Cooperating therewith, carried by the other member, are a plurality of axially movable segments or planets, each having a flat face adapted to engage the face of the circular band of friction material. Additionally, the planets may be rotatably journaled in said other member and so disposed relative to the band of friction material that engagement therewith and relative rotation of the members causes each planet to rotate about its axis. Each planet is axially moved into engagement with the band of friction material by a controlable magnetic force applied to all of the planets to thereby transmit torque from one member to the other.

3,734,257

METHOD AND APPARATUS FOR TORQUE SHARING

Peter De Hertel Eastcott; William Albert Messervey, and William Albert Wyeth, all of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed June 14, 1971, Ser. No. 152,617
Claims priority, application Canada, Oct. 2, 1970, 094619
Int. Cl. F16d *25/10*
U.S. Cl. 192—87.13 **11 Claims**



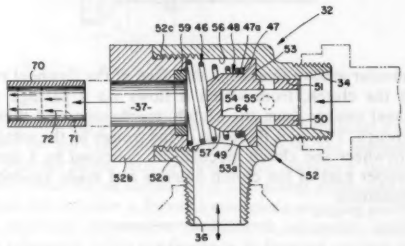
A preferred embodiment of the invention has two like synchronous motors coupled to drive a common load, each motor through an air actuated friction clutch. In starting the drive, the motors are first brought up to synchronous speed unloaded, and the clutches are then engaged by applying pressurized air to them at a rate controlled to load the motors as equally as possible. Once the drive is in operation, the pressure of the air in both clutches is relieved simultaneously for a very short duration of time depending on the motor loads, the clutch for the more heavily loaded motor for the longer time and the clutch for the more lightly loaded motor for the shorter time. This allows both clutches to slip for short times in which the clutch for the more heavily loaded motor slips a little longer than the clutch for the more lightly loaded motor. As a result, load is transferred from the more heavily loaded motor to the more lightly loaded motor. If necessary, the pressure relieving cycle is repeated a number of times until the motors share the load.

3,734,258

COUPLING WITH QUICK RELEASE VALVE

Elwood L. Roob, Parma, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 24, 1971, Ser. No. 127,691
Int. Cl. F16d *25/04*
U.S. Cl. 192—88 B **6 Claims**



A drive for transmitting torque from a driving to a driven member includes an inflatable member which is adapted to connect the driving and driven members when inflated by a fluid under pressure. The drive includes a valve assembly having an inlet connected to a fluid supply, a first outlet in communication with the inflatable member and a second outlet for venting the inflatable member. The valve assembly has a movable one-piece valve member which has a first position for restriciting fluid flow between the inlet and the first and second outlets while providing for fluid communication between the first and second outlets. When fluid is supplied under pressure to the inlet, the valve member has a surface area against which the fluid acts to move the valve member from the first position to a second position. In the second position, the valve member restricts fluid flow between the first and second outlets while providing for fluid communication between the inlet and the first outlet which effects inflation of the inflatable member, resulting in the driving and driven members being drivingly connected thereby. A muffler may be utilized in connection with the second outlet to control the level of noise associated with the operation of the valve.

3,734,259

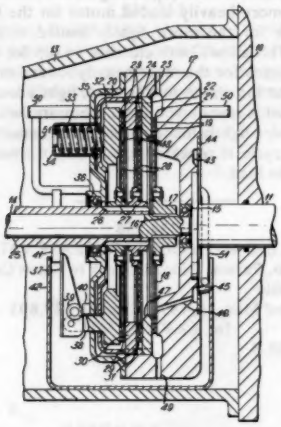
LIQUID COOLED CLUTCHES

Herbert Edward Ashfield, Meltham, England, assignor to David Brown Tractors Limited, Huddersfield, England

Filed July 2, 1971, Ser. No. 159,305
Claims priority, application Great Britain, July 10, 1970, 33,566/70; Feb. 15, 1971, 4,685/71
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **18 Claims**

An engine/clutch combination has an engine driven flywheel on which is mounted a clutch mechanism for disen-

gagably connecting the flywheel to a shaft. A clutch housing, the lower portion of which forms a sump containing oil, envelops the flywheel and clutch mechanism and has a trough within it forming a well which accommodates the lower portions of said flywheel and clutch mechanism. An aperture is formed in the trough for allowing oil to flow from the sump to



an annular groove formed in that face of the flywheel remote from the clutch, from which it flows via a passage in the flywheel remote from the clutch, mechanism and thence to the trough. The oil is flung out of the trough by the rotation of the flywheel and clutch mechanism, collected by a gutter in the upper part of the clutch housing and made available for recirculation.

3,734,260

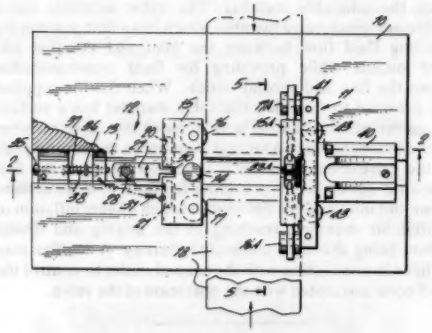
STRIP METAL DIMENSION SENSING DEVICE FOR METAL WORKING MACHINES

Herbert Kroeck, 90 B Dale Street, West Babylon, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,683

Int. Cl. F16d *71/00*; B65h *25/14*

U.S. Cl. 192—127 **9 Claims**



A device for sensing the dimensions of a metal strip as it is fed into a metal working machine such as a punch press and thereby controlling the press to prevent damage. Two sensing blocks, one for thickness and one for width, are pivotally mounted on a settable slide and include two rollers which make mechanical contact with the metal strip as it is fed through the device. If the strip is wider or thicker than the set dimensions, the block is rocked through an angle. By gear means, the angle is multiplied and applied to a contact means which closes an electric circuit and stops the metal working machine.

3,734,261

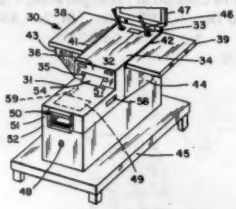
NOTE ACCEPTOR CONTROLLED TICKET DISPENSER

Donald R. Richer, Manchester, N.H., assignor to Granite State Machine Company, Inc., Manchester, N.H.

Filed Jan. 21, 1971, Ser. No. 108,431

Int. Cl. G07b *5/02*

U.S. Cl. 194—4 F **10 Claims**



An automatic ticket dispenser, especially for the sale of lottery tickets, includes a continuous web of tickets, drive track perforated on one side edge only, and advanced one ticket length beyond a cutting station within a locked cabinet, with each insertion of an acceptable paper note by an automatic note acceptor. The control circuit causes a pivoted knife to cut off each individual and successive ticket at the cutting station for gravity fall down a chute and out of a dispensing slot. A spring biased tension bar assures a clean shear and endless chain friction pads prevent ticket drag. Hold down clamps oppose lift-off effect of the upward moving knife.

3,734,262

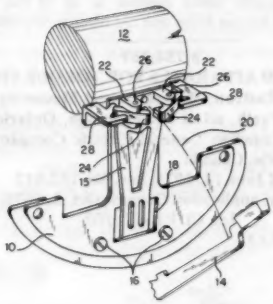
TYPEBAR GUIDE AND REPULSER DEVICE

Peter A. Doll, Dryden; Samuel D. Cappotto, Syracuse; Herrick R. Diamond, and Ernest F. Lohr, both of Homer, all of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed May 5, 1971, Ser. No. 140,419

Int. Cl. B41j *25/22*

U.S. Cl. 197—43 **8 Claims**



A typebar guide and repulser device is disclosed comprising a cantilevered leaf spring and two spaced guide dogs having opposing surfaces mounted adjacent the cantilevered leaf spring. Means are also disclosed for converging the two opposing guide dog surfaces towards one another upon depression of the cantilevered leaf spring.

3,734,263

REVOLVABLE STATION FOR PROCESSING A MOVABLE PROCESSION OF FACTORY-WORK PIECES SUCH AS ANIMAL CARCASSES

Arthur A. Dirks, 5357 North 47th Street, Omaha, Nebr.

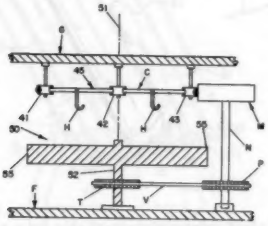
Filed July 2, 1971, Ser. No. 159,209

Int. Cl. B23q *7/02*

U.S. Cl. 198—19 **14 Claims**

There is provided novel revolvable processing stations adapted for use within assembly-line type factory installations

wherein a procession of factory-work pieces, such as animal carcasses, carried at selected intervals along a movable conveyor are brought consecutively alongside a series of processing stations. In the meat processing plant situation, a continuously movable elevated conveyor-line passes substantially arcuately alongside each rotatable processing station and at a desired velocity synchronization therewith whereby operating personnel positioned upon the rotatable dressing station might perform their appointed tasks upon the continu-



ously movable procession of animal carcasses in an exceedingly proficient and rapid manner. The novel rotatable dressing station herein might also include one or more stationary platforms in conjunction therewith whereby operating personnel might take more effective advantage of the dressing station rotatable portion. More sophisticated embodiments of the novel dressing station herein include for the rotatable portion, a plurality of elevations therefor and pivotably connected separable chordal sections for more efficient and versatile utilization of the novel dressing station.

3,734,264

CONVEYOR-MAGAZINE ADAPTED FOR BEING INTERPOSED BETWEEN A FOLDING MACHINE AND STATIONS WHERE SUBSEQUENT OPERATIONS ARE EFFECTED

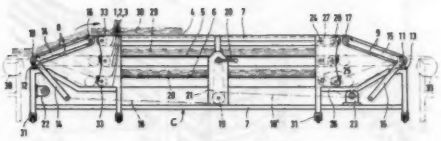
Gunter Stumpf, 7421 Mehrstetten, Kreis Munsingen, Germany

Filed July 19, 1971, Ser. No. 163,685

Claims priority, application Germany, Aug. 21, 1970, P 20 41 686.8

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 T **7 Claims**



At the outlet of a folding machine, there is positioned a magazine conveyor apparatus for receiving "packages" of stacked material from the folding machine to hold such packages and selectively deliver the same for subsequent operations on the packages. The magazine conveyor apparatus comprises a plurality of magazine conveyor belts arranged one above the other and pivotal conveyor belts at opposite ends of the apparatus respectively for delivering a package to a selected magazine conveyor belt and removing a package from a selected belt.

3,734,265

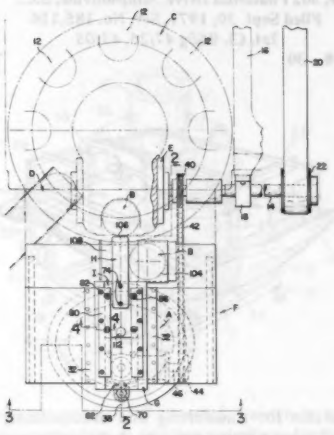
FEED MECHANISM

Arthur Thomas Mueller, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed July 16, 1971, Ser. No. 163,320

Int. Cl. B65g *47/00*

U.S. Cl. 198—24 **14 Claims**



A reciprocating workpiece feed mechanism includes a slide mounted for forward and rearward reciprocating movement along a longitudinal axis. A workpiece engaging finger is movably mounted on the slide for movement along said longitudinal axis between a forward workpiece engaging position and a rearward inoperative position. A releasable holding device releasably holds the finger in its forward position during reciprocating movement of the slide. The releasable holding device is operative for automatically releasing the finger for movement to its inoperative position under action of a predetermined force applied to the finger acting along said longitudinal axis during forward movement of the slide.

3,734,266

TRANSFER STATION

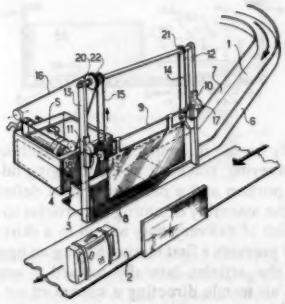
Roger Despres, Saclay, France, assignor to Compagnie Generale D'Automatisme, Paris, France

Filed July 28, 1971, Ser. No. 166,848

Claims priority, application France, July 29, 1970, 7028021

Int. Cl. B65g *47/00*

U.S. Cl. 198—24 **3 Claims**



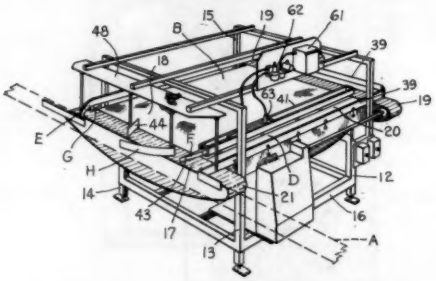
A transfer station comprising a ram operable to push an article from a first conveyor to a second conveyor which is parallel to the first one at least in the station. A partition is

disposed between the conveyors and is mounted for vertical sliding movement in response to movement of the ram, and for pivotal movement about a substantially horizontal axis. An assembly is selectively operable to lock the partition in its vertical position.

3,734,267
ARTICLE STORING AND RECIRCULATING DEVICE

Joseph Tice, 502 Poinsettia Drive, Simpsonville, S.C.

Filed Sept. 30, 1971, Ser. No. 185,116
Int. Cl. B65g 47/26, 43/08
U.S. Cl. 198—30 **7 Claims**

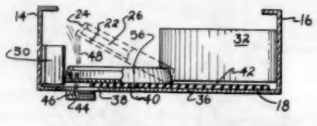


An apparatus for transferring and accumulating articles being moved along a main conveyor. A recirculating conveyor is carried adjacent the main conveyor for receiving the articles from the main conveyor responsove to overloading. Means are provided for automatically returning the articles to the main conveyor when the overloading ceases. A pivotal member is provided adjacent the main conveyor for feeding the articles being returned to the main conveyor into vacant spaces between the articles traveling on the main conveyor. The recirculating conveyor includes belts which are beveled on the edge so as to provide a smooth transfer from a belt traveling in a direction normal thereto.

3,734,268
LID ORIENTING ASSEMBLY

Philip M. Burger, Lawrence, and David E. Carson, Wichita, both of Kans., assignors to Carson & Burger, Incorporated, Lawrence, Kans.

and a continuation-in-part of Ser. No. 39,847, May 22, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,081
Int. Cl. B65g 7/00
U.S. Cl. 198—33 AD **9 Claims**

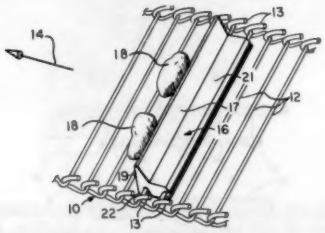


An assembly for use in connection with machines for manufacturing, conveying, stacking, and packaging lid-like articles having a top portion and a peripheral skirt defining a hollow therewithin, the assembly orienting the articles so that, as they move to a point of delivery they are all in a skirt-up position. The assembly presents a first station having an upstanding wall which shifts the articles laterally toward a second station which has an air nozzle directing a stream of air upwardly to flip only the skirt-down articles over into a skirt-up position on the conveyor for movement to a point of delivery. A guide at the second station cooperates with the first wall and the conveyor to position the articles in the desired overlying relationship to the air nozzle so that only the skirt-down articles are flipped.

3,734,269
ROD CONVEYOR CLEATS

Earl W. Ross, La Canada, Calif., assignor to Tatch-A-Cleat Products, Pasadena, Calif.

Filed Mar. 20, 1972, Ser. No. 235,978
Int. Cl. B65g 15/30
U.S. Cl. 198—197 **7 Claims**



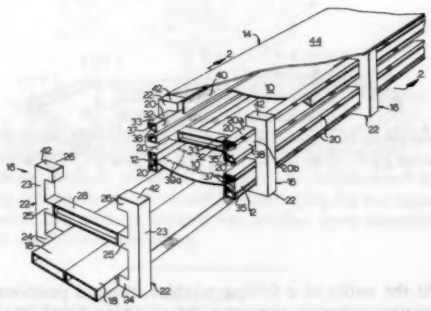
A conveyor cleat releasably attachable to a rod conveyor has a cleat blade for retaining goods during conveyance, a cleat base attached to the cleat blade base, and a pair of flexible lips for releasably retaining adjacent conveyor rods. The lips are integral with the cleat base and define rod-receiving channels which have channel openings facing in a direction opposite to the direction of travel of the conveyor cleat. The lips also provide the corresponding channels with closed channel bottoms located ahead of the corresponding conveyor rod as seen in the direction of travel of the cleat.

The cleats according to the subject invention are easily and economically manufactured, preferably by extrusion, are readily attached to rod conveyors without the use of any special tools or clamping devices, securely maintain themselves in position during travel, and are nevertheless easily removed after use without disassembly or prolonged downtime of the conveyor.

3,734,270
CONVEYOR BELT

Patrick Foody, Highway 17, Hudson, Quebec, Canada

Filed July 19, 1971, Ser. No. 163,624
Claims priority, application Great Britain, July 24, 1970, 36,125/70
Int. Cl. B65g 15/00
U.S. Cl. 198—184 **12 Claims**



Apparatus is disclosed for conveying bulk material, comprising a conveyor belt having integral ribs along its edges, and a frame which supports elongated rib chambers in which the ribs may slide longitudinally as the conveyor belt moves. In a preferred embodiment surfaces of the ribs are supported for frictionless movement by an air film maintained between the ribs and portions of the rib chambers defined by air-permeable sheet material through which pressurized air is passed.

3,734,271

BAND CONVEYER ON AN AIR CUSHION

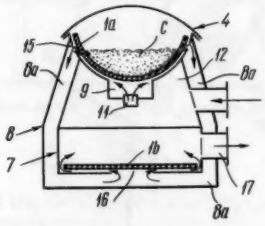
Anatoly Alexandrovich Dolgolenko, ulitsa professora Kachalova, 6, kv. 7; Pavel Pavlovich Onokhov, ulitsa Trefoleva, 6/30, kv. 6; Jury Meerovich Makhover, 8 Sovetskaya, 17/19, kv. 16, and Alexandr Markovich Gudovich, ulitsa V. Alexeeva, 20/24, kv. 25, all of Leningrad, U.S.S.R.

Filed Mar. 1, 1972, Ser. No. 230,601

Claims priority, application U.S.S.R., May 3, 1971, 1649562

Int. Cl. B65g *15/08*

U.S. Cl. 198—184 3 Claims



The conveyer comprises a continuous band whose operating and idle strands are moved in separate closed troughs interconnected by air-supply pipe lines to successively form an air cushion under both strands of the band with the aid of one fan.

3,734,272

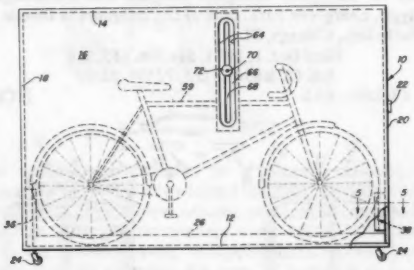
PROTECTIVE ENCLOSURE FOR BICYCLE

Ralph W. Galen, 26 Marrett Road, Lexington, Mass.

Filed June 30, 1971, Ser. No. 158,445

Int. Cl. B65d *85/00, 85/68*

U.S. Cl. 206—1 R 13 Claims



An enclosure suitable for use as a storage locker or shipping container for a bicycle includes a container having a door at one end; a channel on its bottom wall for guiding the wheels of a bicycle as it is rolled into the container; wheel-engaging channels on the door and other end wall for supporting the bicycle in an upright position and a retaining device mounted for vertical movement on the side walls for engaging the frame to restrain it against lateral motion. The position of the restraining device is adjustable from the exterior of the container by locking knobs located in recesses in the side walls so as not to project beyond the surfaces thereof.

3,734,273

HEAT-SHRINKING PACKAGE USING FOAMED PLASTIC SHEET

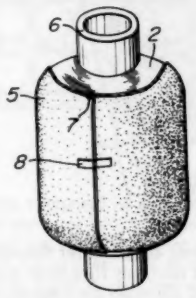
Hiroshi Watanabe, Suzuka-shi, Japan, assignor to Asahi-Dow Limited, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,754

Claims priority, application Japan, Sept. 24, 1969, 44/75286

Int. Cl. B65d *85/30, 85/35, 81/14*

U.S. Cl. 206—46 FC 10 Claims



A packaged product of an article, which is liable to be marred on the surface or which is not allowed to form even a slight disorder on the surface, and a process for producing the said packaged product. The packaged product is obtained by use of a relatively soft foamed plastic, which can protect the surface of the packaged article more successfully than in the conventional heat shrinking packaging process using a film or in the conventional packaging process using a foamed plastic without heat-shrinking. The packaging process of the present invention has not only overcome the drawbacks of the said two processes but also provided unexpected effects.

3,734,274

FOIL PACKAGE

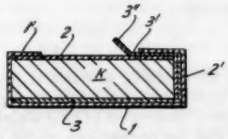
Horst Korner, Munich, Germany, assignor to Gervais AG, Munich, Germany

Continuation of Ser. No. 823,866, May 12, 1969, abandoned. This application May 18, 1971, Ser. No. 144,102

Claims priority, application Germany, Aug. 20, 1968, P 17 86 115.3

Int. Cl. B65d *85/74, 85/76*

U.S. Cl. 206—46 F 8 Claims

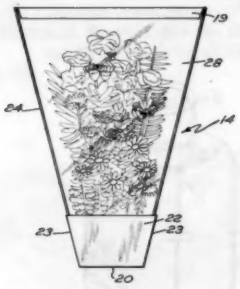


A foil package for polygonal objects having two opposite sides and a plurality of edge faces connecting the same. A first foil member overlies one of the opposite sides. A second foil member overlies the other of the opposite sides and at least one of the edge faces. A cup-shaped third foil member overlies the other side and all of the edge faces exteriorly of and in surface-to-surface contact with the second foil member. The second and third foil members are connected to one another.

3,734,275
DISPLAY AND SHIPPING CONTAINER FOR FLOWERS

Oliver W. Greene, III, 101 Glen Rock Road, West Kingston, R.I.

Filed Feb. 9, 1972, Ser. No. 224,844
Int. Cl. B65d 5/44, 25/54
U.S. Cl. 206—45.31 5 Claims

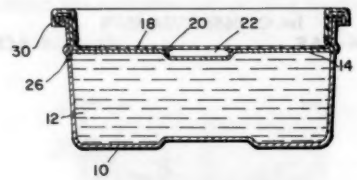


A display and shipping container for flowers having a body integrally formed of a relatively rigid sheet material. The top wall, bottom wall, and side walls are hingedly attached to the rear wall which is shaped in the form of an inverted trapezoid. The front wall is hingedly connected to the front edge of said bottom wall and is also in the shape of an inverted trapezoid but one whose height is substantially less than that of said rear wall to thereby form an open window in the front of said container. Spaced upwardly from the bottom of said rear wall, a flap is formed by an incision therein completely through the thickness of the rear wall with the flap being hinged at its bottom to allow it to be folded rearwardly to function as a stand or brace. The flap also provides access means for watering flowers already packaged in said container and additionally the flap may be folded forwardly to aid in fixedly positioning said flowers within said container.

3,734,276
PACKAGE FOR PROVIDING A PACKAGED PRODUCT

Herbert M. Bank, Owings Mills, Md.

Filed Nov. 13, 1970, Ser. No. 89,298
Int. Cl. B65d 65/18, 41/24, 41/18
U.S. Cl. 206—47 R 5 Claims

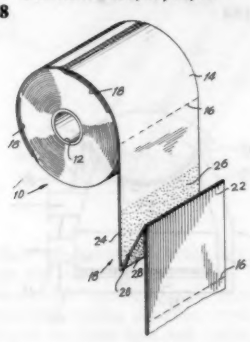


A package for retailing comestible products comprises a conventional wide-mouth container having a beaded rim fitted and sealed with a loose sheet of heat shrink film. This permits a shopper to feel the consistency of the product in the container before purchase while retaining sanitary conditions. Furthermore, the film can be made air tight if desired and will materially increase the shelf life of perishable products such as cottage cheese. A lid may also be applied to the rim over the film as a further protection against damage to the film from handling and to form with the film a pocket for holding promotional items such as surprises, favors, advertising material, etc. The looseness in the film is achieved by placing a holding form on the film against the rim and along part of the inner wall of the container while the film is being subjected to heat shrink temperatures at the external rim adjacent portion thereof. The film substantially conforms to the internal surface of the lid and forms a gasket between the lid and the container.

3,734,277
TOILET PAPER ROLL HAVING A CLEANSING COMPOSITION

Brian D. Bucalo, 155 Roberts Street, Holbrook, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,551
Int. Cl. A47k 7/03, 10/16
U.S. Cl. 206—58 4 Claims

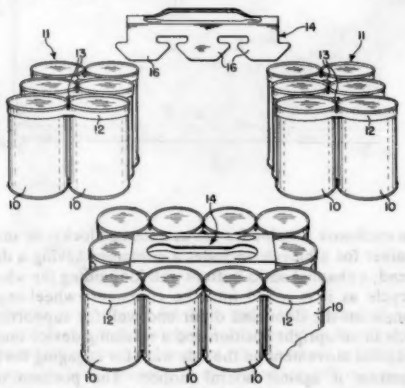


A roll of toilet paper which has web portions where the web is folded upon itself and provided with an inner film of cleansing composition and an outer barrier layer so that the film of cleansing composition cannot spread through the convolutions of the roll while at the same time the folded web portions will become unfolded during unwinding of the roll to expose the cleansing composition. After the film of cleansing composition and barrier layer are respectively deposited at opposite faces of the web at preselected areas therealong the web is folded upon itself at the areas where the film of cleansing composition is located and then the film of cleansing composition at each folded web portion is frozen to retain each web portion in its folded condition during winding of the web into a roll.

3,734,278
CONTAINER PACKAGE

James E. Kerrigan, Arlington Heights, and Mindaugas J. Klygis, Evergreen Park, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

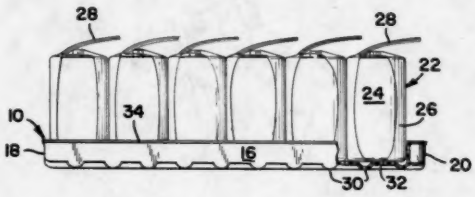
Filed Oct. 1, 1971, Ser. No. 185,515
Int. Cl. B65d 25/22, 71/00, 85/62
U.S. Cl. 206—65 S 8 Claims



A portable container package of a relatively large number of containers comprising the combination of certain carriers

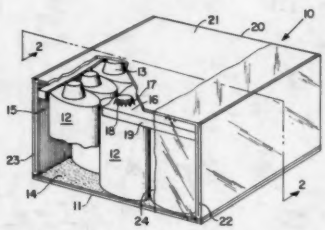
including handle means for sub-groups of the containers, and a cooperating film member, and further including a convenient handle for the entire package.

3,734,279
DISPLAY TRAY
James G. Fisher, Jr., Asheboro, N.C., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 30, 1971, Ser. No. 158,403
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 R **4 Claims**



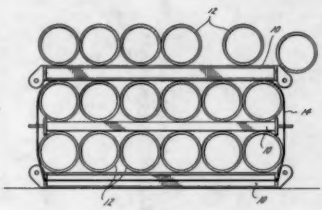
A display tray for a plurality of articles each having a projection extending therefrom, said tray having a boss in at least one of its walls maintaining the articles in arrangement such that no protrusion extends beyond said wall.

3,734,280
SHIPPING CONTAINER FOR SUPPORTING AND PROTECTING A PLURALITY OF ARTICLES
John S. Amneus, Woodlawn, and Malcolm H. Thomas, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 20, 1971, Ser. No. 209,717
Int. Cl. B65d *81/00, 85/62*
U.S. Cl. 206—65 R **8 Claims**



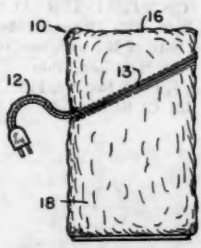
The disclosure is directed to a shipping container or package that is particularly adapted for enclosing and protecting a plurality of individual articles, preferably plastic bottles or the like. The generic concept contemplates providing a base or tray member having its support surface coated with a pressure sensitive adhesive. An array of bottles is placed on the tray so that their bodies are in contacting relationship in the area of their greatest cross-sectional dimension. The bottles are immobilized at their bases by adherence to the adhesive coating on the tray support surface. The upper ends of the bottles are immobilized for lateral movement by the provision of suitable means, such as an immobilizing spacer, sheet member or the like, which retains the upper portion of the bottles in their proper relative relationship with respect to the tray member. An essentially U-shaped cover member is placed over the tray member and bottles such that its ends are supported by the tray member whereupon a shrinkable plastic film is fitted over the entire assemblage and thereafter shrunk to hold the several elements of the combination in rigid assembled relationship.

3,734,281
PIPE PALLET
James E. Armstrong, 19811 White Dove Trail, Crosby, Tex.
Filed Dec. 15, 1971, Ser. No. 208,280
Int. Cl. B65d *71/04*; B65g *1/14*
U.S. Cl. 206—65 B **3 Claims**



A rack of pipe composed of a plurality of pipe rack elements on which pipes are laid, with another plurality of pipe rack elements on top of the first layer of pipe and a second layer of pipe on top of these. The pipe rack elements have stops on the ends which in one position, prevent the pipes from rolling off of the rack elements, and in another position allow the pipes to roll off.

3,734,282
COMBINATION TRAVEL BAG AND RECHARGER FOR PORTABLE BATTERY-OPERATED ELECTRIC APPLIANCE
Jerome I. Rebold, Timonium, Md., assignor to Leonard Bloom, Baltimore, Md., a part interest
Filed May 25, 1971, Ser. No. 146,662
Int. Cl. B65d *85/54*
U.S. Cl. 206—17.5 **1 Claim**

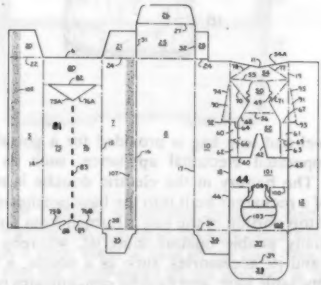


A travel and tote bag is provided for a portable compact battery-operated electrical appliance, such as an electric douche. The battery in the electric douche is recharged by means of a recharger built into the base portion of the bag. At least the top portion of the bag is formed from a relatively soft substantially pliable opaque material, whereby the electric douche and its accessories, such as a nozzle, a hose, one or more disposable bags, and douche concentrates may be stored within the bag, unobtrusively, and shielded from external view. Access to the bag is provided by suitable means, such as a zippered closure. An electric cord is electrically connected to the recharger, internally of the bag, and is likewise stored within the bag. The electric cord may extend beyond the bag, with the bag being substantially closed, thereby hiding the contents of the bag even during recharging. The entire bag is small, compact and lightweight, attractively styled for the feminine market, and may be conveniently carried about or casually thrown into an overnight travel bag or cosmetic case.

3,734,283
POCKET TABLET DISPENSER
Clarence C. Simmons, P.O. Box 826, Lawton, Okla.
Filed Sept. 8, 1971, Ser. No. 178,661
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 1 Claim

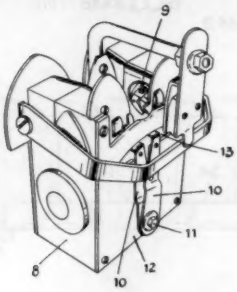
A pair of elongated tubular members, each having one closed end and an inside diameter slightly greater than tablets to be contained, are removably connected together at their other ends to form a convenient pen-like container readily carried vertically in a pocket and held in place by an ordinary pocket clip.

3,734,284
DISPLAY CARTON WITH INTERNAL SUPPORT
Joseph F. Schillinger, Palos Hills, Ill., and Robert Richard Bottomley, New Lenox, both of Ill., assignors to Champion International Corporation, Hamilton, Ohio
Filed Jan. 7, 1972, Ser. No. 216,138
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 7 Claims



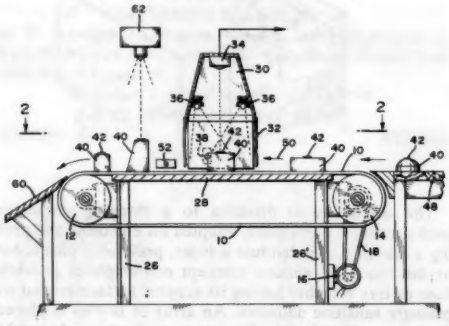
A shadow box with an internal object-supporting cradle that is formed from a support panel. The cradle is formed by articulated members which in turn are derived from the support panel by suitable cuts and scores. The entire shadow box is made of one piece of foldable material such as paperboard or the like.

3,734,285
ATTACHMENT FOR YARN APPARATUS FOR AUTOMATICALLY FORMING A FISHERMAN KNOT OR THE LIKE
Pietro Messa, via Gasparo da Salo 126, Salo, Italy
Filed Feb. 22, 1972, Ser. No. 227,997
Claims priority, application Italy, March 25, 1971, 5126 A/71
Int. Cl. A01d *59/04*
U.S. Cl. 289—2 3 Claims



An attachment for yarn apparatus for automatically forming a Fisherman Knot, which attachment eliminates the necessity of clean-up operations due to dust collecting inside the working parts thereof, by providing the yarn-spreading elements on the outer surface of the attachment's front wall body, by providing the yarn-blocking rod on the inner surface of the attachment's rear wall body, and by rendering the attachment operationally independent of the yarn apparatus itself.

3,734,286
ARTICLE HANDLING APPARATUS
Luther G. Simjian, 7 Laurel Lane, Greenwich, Conn.
Filed Dec. 27, 1971, Ser. No. 212,432
Int. Cl. B07c *5/16*
U.S. Cl. 209—121 15 Claims

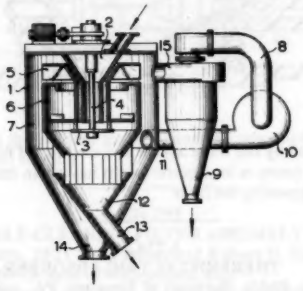


Articles provided with code indicia are exposed serially to a sensing means disposed in a chamber. The sensing means provide indicia responsive signals to a computing means where the information provided is processed, such as for inventorying, counting, price computation purposes, etc. Image recording means are provided for producing a documentary record of each article as such article is conveyed along a predetermined path past the sensing means. Means are present to divert an article from said predetermined path if the sensing means produce a spurious signal upon sensing said code indicia.

3,734,287
AIR CLASSIFIER ASSEMBLY

Heinz Jager, Bochum, Germany, assignor to WEDAG Westfalia Dinnendahl Groppel Aktiengesellschaft, Bochum, Germany

Filed Jan. 20, 1970, Ser. No. 4,280
Claims priority, application Germany, Jan. 25, 1969, P 19 03 743.5
Int. Cl. B07b 7/10
U.S. Cl. 209—139 A **2 Claims**

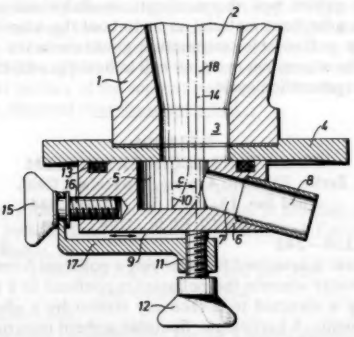


Air classifier assembly for sizing particulate material includes a sizing chamber, a rotary distributor plate located in a lower portion of the sizing chamber for flinging particulate material supplied to the plate into the sizing chamber, a substantially cylindrical fine-particle separating chamber coaxially surrounding the sizing chamber and communicating therewith through an opening in the upper portion thereof, ventilating means located in the separating chamber for drawing into the separating chamber fine particles from the particulate material in the sizing chamber, ventilating means and a fine-material separator located externally to the separating chamber, the externally located ventilating means having a suction line connected to the fine-material separator and therethrough to an upper portion of the separating chamber and a compression line connected tangentially to the separating chamber.

3,734,288
DISCHARGE DEVICE FOR THE BOTTOM FRACTION AT A VORTEX TYPE SEPARATOR

Karl Arvid Skardal, Artillerigatan 48, 114 45 Stockholm, Sweden

Filed Mar. 11, 1971, Ser. No. 123,280
Claims priority, application Sweden, Mar. 12, 1970, 3314/70
Int. Cl. B04c 5/14
U.S. Cl. 209—211 **9 Claims**

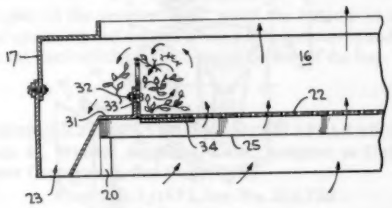


A device is provided for discharging the heavy bottom or reject fraction from a vortex type separator. The device comprises a vortex chamber disposed underneath the bottom fraction outlet of the separator with the axis of symmetry of the vortex chamber parallel to the axis of symmetry of the bottom fraction outlet. The vortex chamber is provided with a stationary outlet port for the reject fraction, located in the circumferential wall of the vortex chamber or in the bottom of the vortex chamber close to the circumferential wall thereof. The vortex chamber is displaceable relative to the bottom fraction outlet in a direction perpendicular to the axis of symmetry of the vortex chamber. By displacing the vortex chamber relative to the bottom fraction outlet of the separator it is possible to vary the flow volume of the bottom fraction being discharged through the outlet port of the vortex chamber.

3,734,289
APPARATUS FOR SEPARATING PRODUCTS

Lawrence Pearman, Post Office Box 521 Ocilla Highway, Tifton, Ga.

Filed Aug. 24, 1971, Ser. No. 174,362
Int. Cl. B03b 3/12
U.S. Cl. 209—467 **5 Claims**

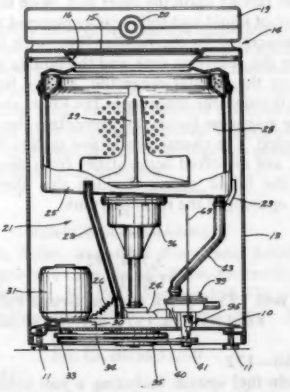


Apparatus for separating light from heavier products lying on a shaking table wherein a vacuum pressure is applied to draw off the light products, the table including an air shelf disposed beneath a perforated table bed at the end thereof at which the light products are concentrated during vibration of the table, thereby insuring a complete separation at said end of the light from the heavier products whereby said light products may be conveniently drawn off from said table bed.

3,734,290
LATCH MECHANISM

Robert B. Nelson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

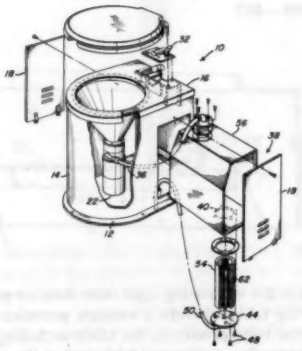
Filed Oct. 20, 1971, Ser. No. 190,775
Int. Cl. B04b 7/06
U.S. Cl. 210—146 **12 Claims**



A system for latching the access door of a rotatable apparatus includes a normally disengaged rotation sensor opera-

tively connected to a door latch mechanism. The rotation sensor is actuated to a sensing condition by a latch mechanism responsive to an attempt to open the door and in turn controls the latch mechanism to prevent opening of the door when the rotatable apparatus is rotating. The latch mechanism includes a pivotally mounted assembly movable as a unit when there is no rotation to permit opening of the door. A latch pawl included in the assembly is separately and pivotally movable responsive to the sensing of rotation to prevent opening of the door.

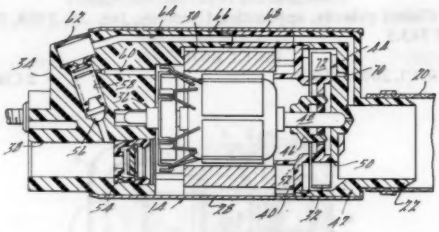
3,734,291
WASTE TREATMENT SYSTEM
Scott M. Schondelmyer, Dayton, Ohio, assignor to Dayton Manufacturing Company, Dayton, Ohio
Filed Apr. 29, 1971, Ser. No. 138,430
Int. Cl. C02c *5/02*
U.S. Cl. 210—152 **1 Claim**



A self-contained waste treatment system includes a bowl for receiving liquid and solid wastes and a macerator associated with the bowl for macerating the solid wastes and pumping the resulting mixture of liquids and divided solids to a receiving tank. An upstanding, tubular filter is mounted in the receiving tank and surrounds an opening in a bottom wall of the tank. Within the tubular filter a tubular magazine is positioned having a closed upper end, an open lower end and a series of openings through a lower section of its side wall. The magazine is also provided with a nipple at its lower end which is received in an outlet from the receiving tank and a filter pad is received in the magazine and lies across its open lower end. A stack of chemical additive tablets, such as calcium hypochlorite, are received in the magazine with the lower most tablet resting upon the filter pad. With this construction the mixture of liquid and solid wastes pumped to the receiving tank are separated by the tubular filter with the solids being retained in the receiving tank and the liquids passing through the filter to the tubular magazine. As the liquids enter the magazine through the opening in the lower end thereof pressure in the magazine builds up, preventing the magazine from being flooded. The chemical additive tablets in the magazine therefore, are dissolved sequentially from the bottom of the stack as the liquid passes through the filter and out the discharge opening in the receiving tank.

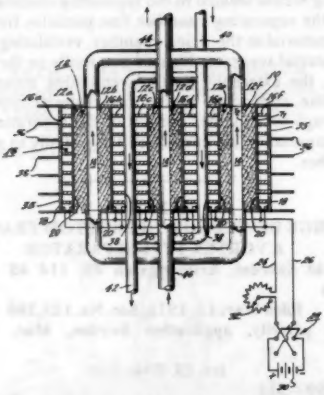
3,734,292
FUEL PUMP
Rupert B. Bell, 15318 Mack Avenue, Grosse Pointe, Mich.
Filed Nov. 18, 1970, Ser. No. 90,661
Int. Cl. B01d *35/02*
U.S. Cl. 210—172 **3 Claims**

A vehicle fuel system including a fuel tank pick up filter adapted to remove water and other foreign material, a fuel pump having a continuous flow therethrough and providing fuel to the carburetor at a desired pressure, and bypass passage means permitting the recirculation of fuel by said pump bypassing said filter thereby enabling the latter to be



self-cleaned by the wave action and sloshing of fuel in the fuel tank. The pump is an electric pump having an internal bypass passage bypassing the filter.

3,734,293
THERMOELECTRIC ADSORBER
Edward G. Biskis, Borough of Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation of Ser. No. 740,791, May 16, 1968, abandoned, which is a continuation of Ser. No. 524,550, Feb. 2, 1966, abandoned. This application Mar. 4, 1970, Ser. No. 15,319
Int. Cl. B01d *53/04*
U.S. Cl. 210—185 **2 Claims**

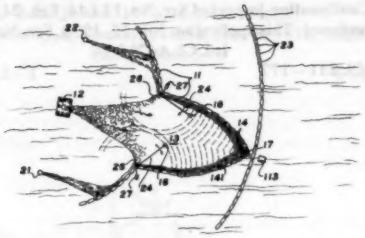


A gas purification system of the adsorption type is disclosed wherein peltier type thermoelectric modules are employed with the adsorbent material so as to cool the adsorbent and eliminate unfavorable temperature gradients in the adsorber during the adsorption cycle, as well as heat the adsorbent during the regeneration cycle.

3,734,294
POLLUTANT RECOVERY SYSTEM
James J. Zerbe, 2323 5th Avenue, San Rafael, Calif.
Filed Jan. 15, 1971, Ser. No. 106,844
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **10 Claims**

A system is described for removing a pollutant from the surface of water wherein the pollutant is confined to a recovery area and is directed to a recovery station by a plurality of linked booms. A particulate, floatable sorbent material is continuously distributed over the pollutant confined in the recovery area as it moves to the recovery station. The sorbent material is distributed in sufficient quantity to adsorb substan-

tially all of the pollutant prior to its arrival at the recovery station. At the recovery station, recovery means are employed



for removing the sorbent material and the adsorbed pollutant from the water surface.

3,734,295

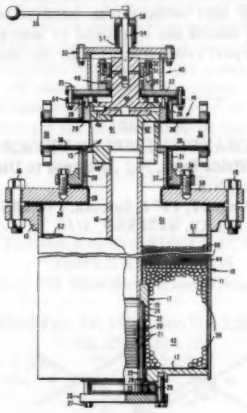
SELF-CLEANING FILTER ASSEMBLY

Frank T. Smith, 2521 Bona Road, and Robert D. Smith, 2407 Kingman Drive, both of Wilmington, Del.

Continuation-in-part of Ser. No. 853,321, Aug. 27, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 175,922

Int. Cl. B01d *29/08*

U.S. Cl. 210—278 **20 Claims**



Disclosed herein is a filter assembly which can be cleaned by a fluidizing backflow, comprising: a container; a hollow drain structure disposed near the base of said container and having a plurality of openings; a support bed of support particles surrounding the drain structure to a height above the openings therein which equalizes the pressure drop between the top of the support bed and the drain structure over the entire upper surface of the support bed; and a filter bed of filter particles, disposed over the support bed.

3,734,296

REFRIGERANT DRIER

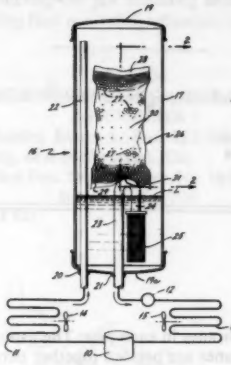
Robert H. Proctor, Richmond, and Ralph J. Kombol, Connersville, both of Ind., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 27, 1971, Ser. No. 147,350

Int. Cl. B01d *27/02*

U.S. Cl. 210—288 **7 Claims**

A refrigerant receiver-drier having a sealed desiccant-containing bag made of material through which refrigerant fluid will not flow, but provided with a plurality of apertures small enough to retain the desiccant and large enough to permit free flow of refrigerant into the bag for access to the desiccant contained therein. That portion of the bag which occupies the lower part of the receiver-drier, when the latter is in use, is free of apertures and defines a sump which receives and traps desiccant fines which gravitate to the bottom of the bag.



3,734,297

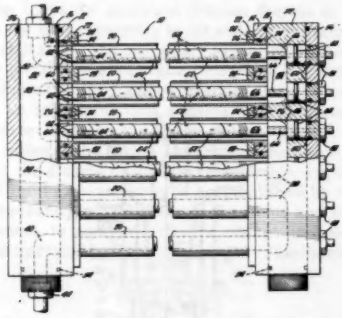
MODULE FOR REVERSE OSMOSIS APPARATUS

William K. Windle, Encinitas, Calif., assignor to Universal Water Corporation, San Diego, Calif.

Filed Feb. 2, 1972, Ser. No. 222,750

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **4 Claims**



A module useful in reverse osmosis apparatus contains a number of semipermeable membrane elements each enclosed in an individual pressure resistant tube. End members holding the ends of the pressure tubes in a ladder-like configuration, contain removable plugs having channels for directing liquid flow between the ends of pressure tubes. Plugs providing series, parallel or series-parallel flow through the pressure tubes may be inserted in the end members.

3,734,298

DEVICE FOR DIALYSIS

Gerhard Riede, Eslov, and Olov Hagstrom, Lund, both of Sweden, assignors to Gambro AG, Bern, Switzerland

Filed Nov. 12, 1971, Ser. No. 198,276

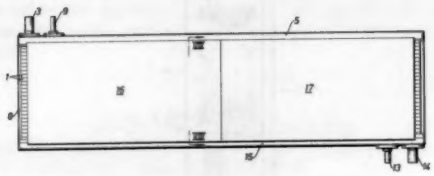
Claims priority, application Sweden, Nov. 17, 1970, 15512/70

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **9 Claims**

A dialysis device particularly for use in purification of blood is comprised of a plurality of spacer plates and pairs of inter-

mediate membranes. The surfaces of the plates are configured in such manner that channels for purification liquid are formed between them and the membranes, and channels for the blood which is to be purified through dialysis are formed



between the membranes in each pair. The assembly of spacer plates and membranes are pressed together between a pair of clamping plates by means of clamping rails which extend along and engage grooves provided along the sides of the clamping plates.

3,734,299

AUTOMATIC CONTINUOUSLY BACKFLOW WASHING-TYPE FILTER

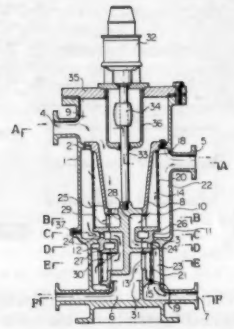
Jiro Akiyama, Yokohama, Japan, assignor to Kanagawa Kiki Kogyo Co., Ltd., Yokohama-shi, Japan

Filed Dec. 20, 1971, Ser. No. 209,557

Claims priority, application Japan, Dec. 28, 1970, 45/132035

Int. Cl. B01d *29/38*

U.S. Cl. 210—333 **1 Claim**



An automatic continuously backflow washing-type filter comprising a primary filtering unit, a substantial area portion of which is employed to primarily filter a charge of oil to be filtered, a filtrate accumulation chamber for accumulating and supplying a substantial portion of the filtrate from said primary filtering unit to a consuming device and recycling the remaining minor portion of the filtrate as a backflow washing oil which automatically washes the primary filtering unit incrementally, and a secondary filtering unit for filtering said backflow washing oil after the washing of the primary filtering unit and containing foreign matter therein which was separated from the original charge of oil, the secondary filtering unit being also incrementally and automatically washed while filtering the backflow washing oil from the washing operation through the primary filtering unit.

3,734,300

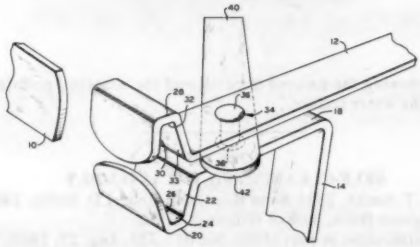
SUPPORT FOR SUSPENDED FILES

Rex D. Carter, Clovis, Calif., assignor to Sheller-Globe Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 13,644, Feb. 24, 1970, abandoned. This application July 15, 1970, Ser. No. 55,099

Int. Cl. A47f *5/10*

U.S. Cl. 211—177 **10 Claims**



A support frame assembly for suspended files which is comprised of a minimal number of components and may be readily assembled by the user without the need of special tools wherein camming means are employed to selectively engage and disengage support rail elements with the associated support frames.

3,734,301

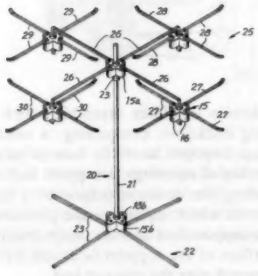
MERCHANDISE DISPLAY DEVICE

John Rastocny, Cliffside Park, N.J., assignor to Diro Industries Corp., Union City, N.J.

Filed Aug. 31, 1971, Ser. No. 176,605

Int. Cl. A47f *5/02, 5/10*

U.S. Cl. 211—177 **1 Claim**



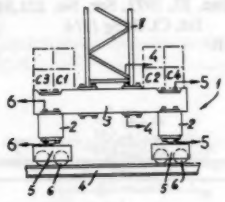
A merchandise display device comprising an array of multi-branch display racks with rotatable and stationary components. A post, a multi-legged stand and a plurality of radial display branches are held in assembled relation by a plurality of connectors of identical construction. Each connector has an axial bore and a plurality of circumferentially positioned apertured portions, said branches being supported by said apertured portions, one of said connectors being rotatably mounted upon said post, another serving as the fixed juncture between said post and said stand.

3,734,302

TRAVELING MONOTOWER CRANE BASE

Pierre Durand, Lyon, France, assignor to Societe Anonyme Richier, Paris, France

Filed June 4, 1971, Ser. No. 150,125
Claims priority, application France, June 5, 1970, 7020649
Int. Cl. B66c 5/00
U.S. Cl. 212—1 6 Claims



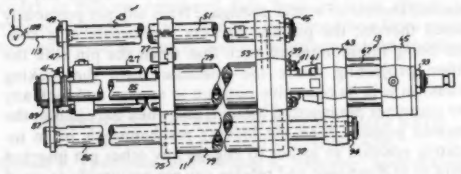
The base according to this invention for a traveling monotower crane consists only of lower and upper concrete beams, whether reinforced or prestressed, assembled to one another and to the tower and carrier trucks of the crane, by means of tie-rods extending vertically therethrough in order to impart a high strength to the assembly and improve the stability of the tower. The tie-rods extend preferably through guide tubes embedded in the concrete and the nuts provided at the ends of these tie-rods bear against the concrete faces through the medium of stress-distributing plates. The tower may preferably be mounted adjacent one end of the upper beams, in order to increase the useful radius of the crane and therefore its working efficiency measured in tons/meter (FIG. 7).

3,734,303

TRAVEL CYLINDER AND GRIPPER ACTUATOR WITH TRIPLE GUIDE RODS

Leland F. Blatt, 790 Shoreham Road, Grosse Pointe Woods, Mich.

Filed Feb. 24, 1972, Ser. No. 228,849
Int. Cl. B66c 1/42
U.S. Cl. 214—1 BB 11 Claims



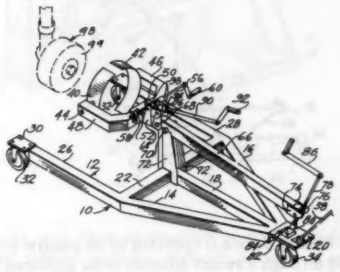
A material handling device of increased rigidity and carrying capacity which includes a travel cylinder assembly and actuator for a workpiece gripper. A hanger supports spaced bushing plates mounting parallel spaced bushings containing housings to slidably receive three guide rods. Two, thereof, are arranged laterally and a third therebetween and below. The one ends of the guide rods are bracketed together. The other ends of the guide rods are secured to the gripper actuator and movable therewith on activation of the travel cylinder. A modification provides for successive locating feed of the gripper actuating assembly with actuation of the gripper jaws thereafter. A further modification includes a further guide or carrier rod mounting the jaw actuating assembly for a more extended locating feed preceding actuation of the jaws.

3,734,304

MACHINE FOR HANDLING AIRCRAFT BRAKE ASSEMBLIES

Julian C. Cabaniss, Route 1, Box 152 Island Shoals Road, Henry County, near McDonough, Ga.

Filed Dec. 28, 1970, Ser. No. 101,790
Int. Cl. B65g 7/08
U.S. Cl. 214—1 BD 13 Claims



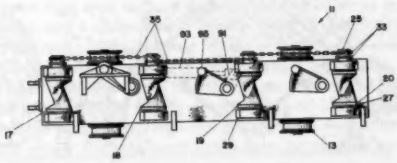
Especially suited for one mechanic handling heavy disc brake assemblies, such as those removed from wheels of aircraft, the present apparatus comprises a wheeled frame which is controlled manually by a tongue. The frame supports a projecting clamp structure comprising a pair of clamps mounted in a clamp frame for complete rotation therein to be positioned on the brake assembly to lift and remove same and to lift and install same. The clamps are supported on clamp arms which are pivoted on a support means which is mounted on a horizontal pivot on the frame. The entire clamp frame is controlled in an arcuate vertical position by a long mechanical screw member between the frame and the support as is the clamping action of the bands. Thus the mechanic can position and orient the clamps on the brake assembly. Further positioning of the bands vertically is accomplished by means of another mechanical screw between the frame and the clamp support frame. In another form, the clamps and positioning thereof are operated hydraulically instead of mechanically.

3,734,305

WORKPIECE MANIPULATING APPARATUS AND TURNING SPOOL THEREFOR

John L. Parris, Knoxville, Tenn., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,932
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QG 23 Claims



In an apparatus for manipulating an elongated workpiece, a plurality of spools are transversely mounted along the length

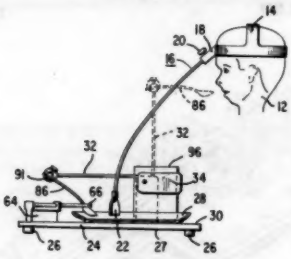
of a fixture for rotation about spaced axes. Each spool includes a peripheral work-engaging surface which is contoured so as to cause the workpiece to turn about an axis in a plane substantially normal to the axis of rotation of the spool as the spool is rotated.

3,734,306

SELF-FEEDING DEVICE FOR HANDICAPPED PERSONS

William Henry Morewood, 18 Laning Avenue, Pennington, N.J.

Filed Feb. 16, 1972, Ser. No. 226,912
Int. Cl. A47g *21/08*
U.S. Cl. 214—1 T **6 Claims**



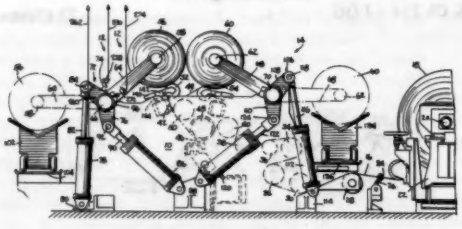
A self-feeding device is operated by an electric motor that is energized through a switch adapted to be activated by a wand attached to a handicapped operator who need only be able to control the motion of his head and neck. The device comprises a spoon clamped to a first shaft that is mounted for rotation adjacent one end of a tubular arm. The electric motor is coupled to a second shaft, fixed adjacent to the other end of the tubular arm, to reciprocate the arm over a 90 degree angle, between horizontal and vertical positions. Cams are provided so that each time the switch is actuated the arm rotates 90°. A link, disposed within the tubular arm, has one end coupled to the first shaft through a crank and the other end pivoted so that the spoon can be disposed within a dish at an angle of less than 180° to the horizontal, whereby food may be pushed, via the wand, from the dish onto the spoon when the arm is in a horizontal position. The spoon is automatically rotated to a substantially horizontal position when the arm is moved to a vertical position.

3,734,307

APPARATUS FOR HANDLING REWIND ROLLS

Gerrit Degelleke, Parsippany, and Robert E. Bush, Morris Plains, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 41,904, June 1, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,042
Int. Cl. B65h *19/30*
U.S. Cl. 214—1 BD **8 Claims**



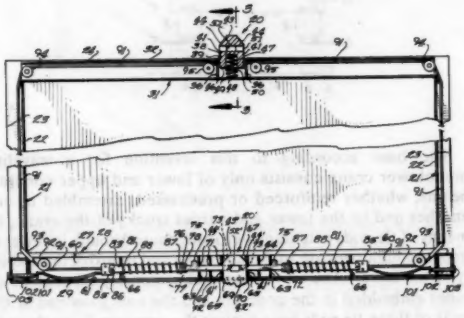
This invention relates to apparatus for handling rewind rolls during their buildup at the outer end of rewind arms on a rewind machine, thence for thence for pivoting the rewind arms and the rewind rolls to an unloading position convenience for removal.

3,734,308

APPARATUS FOR SECURING AND LOCKING FREIGHT CONTAINERS IN STACKED RELATIONSHIP

Francis J. Pasternack, P.O. Box 752, 605 N. Wolf Road, Hillside, Ill.

Filed Jan. 27, 1972, Ser. No. 221,347
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **10 Claims**



Apparatus for use with freight container for effecting the automatic securement and locking thereof in vertically stacked relationship, along with being used to secure such containers to the carrying surface of railroad flatcars, trailer chassis, ship decks and the like. The apparatus is in the form of a locking device including a pin vertically projecting from the top surface of a container and reciprocally movable between its projecting position and a position depressed inwardly of the container approximately flush with the top surface of the container, a pin receiving aperture in the bottom surface of the container in a position for receiving a pin from another container, a locking mechanism mounted inside the bottom surface of the container and adjacent the pin receiving aperture and movable between an operative position wherein it would engage a pin from another container when projecting therein, and an inoperative position where it would not engage any pin contained therein or would disengage from any pin previously retained therein; the pin and locking mechanism of a container being interconnected such that when the pin is in the position projecting above the container then the locking mechanism is in its operative position to engage and lock any other container pin inserted therein, and when the pin is in the depressed position then the locking mechanism is in an inoperative position so as not to engage any other pin inserted therein or to disengage and release any pin previously secured and locked therein.

3,734,309

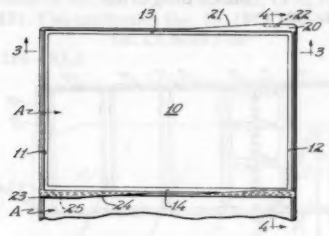
DOUBLE STACK INTERLOCKING TRAYS

Robert F. Bateman, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Nov. 27, 1970, Ser. No. 93,070
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **11 Claims**

Serving trays of generally rectangular form are constructed

to interlock along adjacent edges as the trays are moved together. The trays also stack and nest together. One corner of



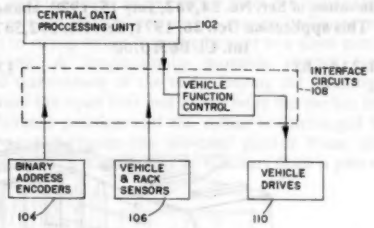
each adjacent tray raises over a suitable connecting means on the cooperable tray during the interlocking operation.

3,734,310

STACKER CRANE CONTROL SYSTEM

Howard F. Miller, Frederick, Md., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Aug. 12, 1970, Ser. No. 63,051
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A **20 Claims**



Loads are transferred between stations by horizontal and vertical movement of a pallet table on an elevator mechanism carried by a vehicle from which the table is horizontally extended and retracted when aligned with a preselected storage rack. A computer is interconnected with motion propelling and controlling apparatus on the vehicle through interface circuitry to process command data from an input library and vehicle position, motion data and rack condition from sensors to produce the movement desired for effecting load transfers.

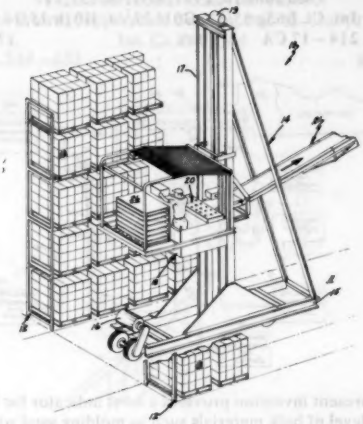
3,734,311

WAREHOUSE APPARATUS AND METHOD WITH ARTICLE LABEL PRINTING MEANS

Gerald F. Thompson, and Richard R. Ridenour, both of Grand Rapids, Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 811,533, March 28, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,560
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A **29 Claims**

A system for picking and marshalling articles in a warehouse having a plurality of article storage racks. The system includes a picking unit which moves along the racks and an operator thereon removes articles selectively therefrom. The picking unit includes a printer for printing labels and an applicator for applying them automatically to the article selected. The unit includes, additionally, a system for placing a destination code on the articles so that they can be sorted automatically in the marshalling area. Information regarding the articles to be picked, their location within the



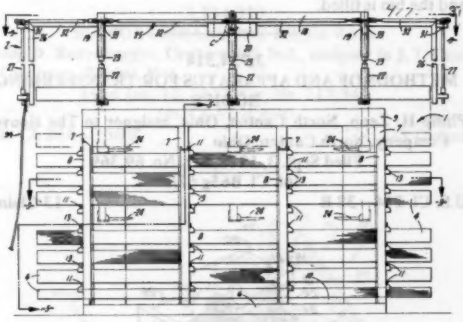
storage racks and their destination is transmitted to the picking unit and/or operator through a stack of punched cards, a system computer or the like.

3,734,312

STEEL BAR STORAGE RACK UNIT AND COOPERATING LIFTING DEVICE

Donald E. Hickinbotham, Stockton, Calif., assignor to Hickinbotham Bros. Ltd., Stockton, Calif.

Filed Jan. 31, 1972, Ser. No. 222,137
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A **12 Claims**



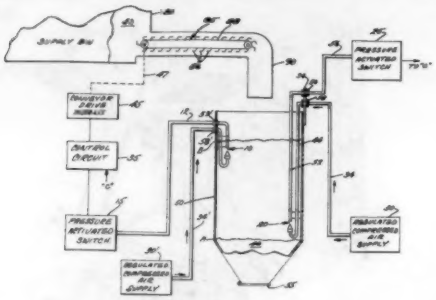
A pigeon-hole type rack unit having individual racks in vertical stacks, and a cooperating, transitionally suspended lifting device; the racks being adapted for the reception and storage—for wholesale—of relatively small gauge, elongated steel bars in heavy, standard mill bundles of predetermined length; and said rack unit and lifting device being of a construction such that the racks—successively upward from the lowermost one in a given stack thereof—can each be loaded by said device with a bundle of such bars, and thereafter—when desired—any bundle in a rack of such stack, and again by said device, can be lowered to a rack (when empty) therebelow and without removing such bundle, or any others, from the rack unit.

3,734,313

BULK BIN LEVEL INDICATOR

Donald E. Gauthier, Spring Lake, and William V. Jones, Muskegon, both of Mich., assignors to Donald Engineering Company, Inc., Grand Rapids, Mich.

Filed June 10, 1971, Ser. No. 151,777
Int. Cl. B65g 65/32; G01f 23/14; H01h 35/34
U.S. Cl. 214—17 CA 17 Claims



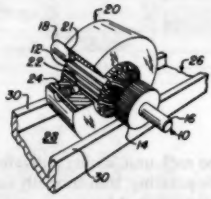
The present invention provides a level indicator for indicating the level of bulk materials such as molding sand which are stored in a bin. The indicator employs a pneumatically operated sensor having a J-shaped output tube which is mounted in the bin to supply a stream of air to an input tube across a gap between the J-shaped output tube and the input tube when no bulk material is present at the level of the indicator. When the bulk material is present at the level of the indicator, it obstructs the gap between the output and input tubes. This causes a pressure change at the input tube which can be detected by suitable means coupled to the input tube to provide a control signal. The control signal can be utilized in conjunction with filling apparatus to automatically refill the bin when the level falls below a predetermined level at which an indicator is installed. A second level indicator can be installed near the top of the bin to provide a control signal which will automatically stop associated filling apparatus when the bulk material has reached the level of the second indicator and the bin is filled.

3,734,314

METHODS OF AND APPARATUS FOR TRANSFERRING BODIES

Philip H. Zepp, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Sept. 3, 1970, Ser. No. 69,369
Int. Cl. B65g 67/00
U.S. Cl. 214—38 R 13 Claims



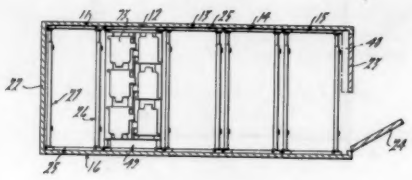
Methods of and apparatus for transferring bodies between work stations by supporting each body in a circular transfer member which rolls under the influence of gravity between work stations along a downwardly inclined track. Means are provided for inserting and removing a body from its transfer member at a work station and means are also provided for elevating each member to compensate for the vertical component of gravitational movement thereof along the downwardly inclined track.

3,734,315

MEANS FOR TRANSPORTING PALLETIZED LOADS

Wayne H. James, Detroit, Mich., assignor to Palmer-Shile Company, Detroit, Mich.

Filed July 8, 1970, Ser. No. 53,194
Int. Cl. B65g 67/02
U.S. Cl. 214—38 CC 6 Claims



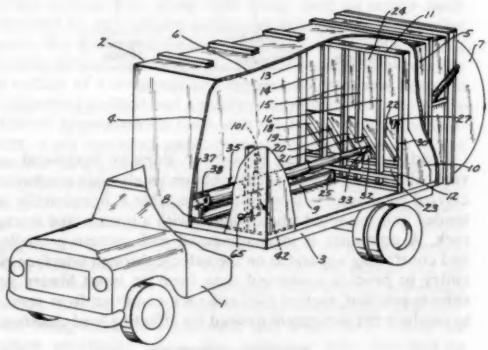
A collapsible pallet rack for mounting in a container, comprising end frames connected by tiers of front and rear telescoping beams. Pallets are detachably mounted on these beams by latches which are released in response to the presence of a fork lift.

3,734,316

APPARATUS FOR CONTROLLING DIRECTION OF MOVEMENT OF REFUSE BODY COMPACTING AND UNLOADING BLADE

Stanley W. Worthington, 824 Clough, Waterloo, Iowa

Continuation of Ser. No. 54,982, July 15, 1970, abandoned.
This application Oct. 26, 1971, Ser. No. 192,587
Int. Cl. B65f 3/00
U.S. Cl. 214—82 13 Claims

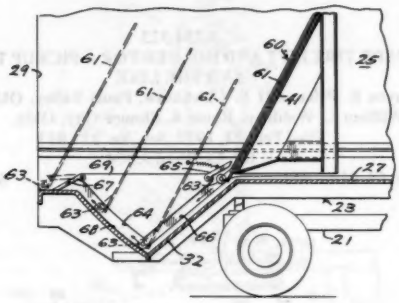


The invention relates to a valve arrangement including a spool mounted within the valve body and positionable among first, neutral and second positions for controlling the passage of fluid through the valve; a detent mechanism for releasably holding the spool in a position subsequent to manual movement of the spool to the position; a plunger within the valve body and axially associated with the spool for relative movement therewith, the plunger subject to movement in relation to the position of a force applying member movable between two positions; a pair of oppositely acting springs axially interposed within the valve body between the sppol and the plunger for biasing the plunger toward a neutral position; and fluid pressure means operable in response to the member being resisted by a predetermined resistance to release the detent mechanism whereby automatic positioning of the plunger for controlly movement of the member is obtainable.

3,734,317
REFUSE COLLECTING VEHICLE

William A. Herpich; Glenn S. Park, both of Galion, Ohio, and George W. Palmer, Durant, Okla., assignors to Peabody Galion Corporation, Galion, Ohio

Division of Ser. No. 28,566, April 15, 1970, Pat. No. 3,661,281. This application Dec. 29, 1971, Ser. No. 213,627
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 4 Claims

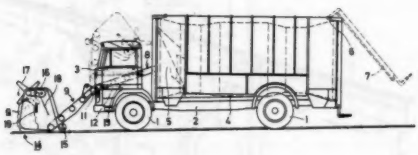


This invention relates to a rear end loader type of refuse collecting vehicle. There is no tailgate and the loading hopper, rather than being in the tailgate, is in the rear of the vehicle body. A packing blade moves refuse from the hopper into the forward portion of the body and in one embodiment may be reversed to sweep refuse from the hopper to a point exterior of the vehicle. A longitudinally movable ejector panel is mounted transversely of the body. During the discharging of refuse from the open rear end of the body the packer blade is in an elevated position and the refuse is discharged by the ejector panel between the elevated packer blade and the hopper. In some embodiments an auxiliary floor is provided in the hopper.

3,734,318
GARBAGE COLLECTION VEHICLE

Johann Kraus, Kissing, near Augsburg, Germany, assignor to Keller & Knappich GmbH, Augsburg, Germany

Continuation-in-part of Ser. No. 821,354, May 2, 1967, abandoned. This application Mar. 31, 1971, Ser. No. 129,732
Int. Cl. B60p *1/36*; B65g *65/20*
U.S. Cl. 214—83.14 3 Claims

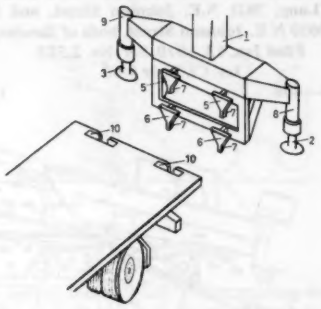


A garbage collection vehicle having a conveyor means mounted on a cantilever arm which is secured adjacent to the driver's cab of the vehicle, for transporting disposable garbage containers from ground level to a garbage collection receptacle mounted on the rear of the vehicle. A disposal frame is mounted on the front end of the cantilever and includes guiding means mounted on the frame for guiding the containers into the disposal frame, and a cross wheel rotatably mounted on the frame for engaging and pushing the containers onto the conveyor means.

3,734,319
METHOD AND DEVICE FOR DETACHABLE COUPLING TOGETHER OF IMPLEMENT AND VEHICLE

Knut Olov Frisk, Gavle, Sweden, assignor to AB Tico, Gavle, Sweden

Filed Dec. 16, 1970, Ser. No. 98,707
Claims priority, application Sweden, Dec. 23, 1969, 17915/69
Int. Cl. B60 *1/64*
U.S. Cl. 214—131 5 Claims

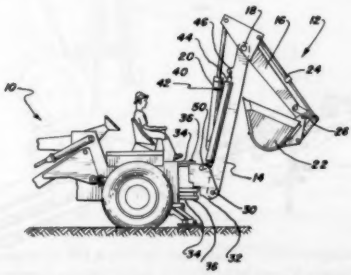


Method of detachably coupling together a loading implement with coupling means and supporting legs, and a vehicle, said coupling means being essentially in a vertical direction detachably couplable in self-centering engaging means located on the vehicle, the method consisting in the vehicle being driven up to the implement set up on the supporting legs, that coupling and engaging means are brought into a roughly precentred starting coupling position, that the coupling means on the implement are raised or lowered, with the aid of the supporting legs, relative to the engaging means for effecting the coupling, said means being automatically centered in relation to one another, brought into engagement and detachably held together.

3,734,320
SUPPORT MEANS FOR BOOM RAM

Philip D. Redenbarger, Centerpoint, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 12, 1972, Ser. No. 217,341
Int. Cl. E02f *3/00*
U.S. Cl. 214—138 R 11 Claims



The invention relates to an improved support means for a boom ram that swings a boom about a horizontal pivot axis on a support. The support means consists of a link pivoted on the support with the cylinder of the ram pivotally carried by the link. The support has first and second spaced stops located in the pivotal path of movement for the link. Releasable lock means are carried by the frame and cooperate with the link to

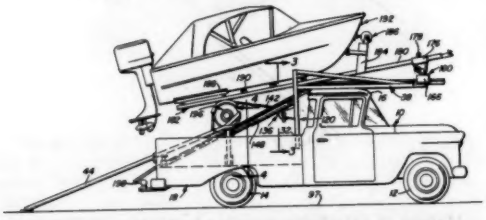
maintain the link in engagement with either of the stops defining first and second positions for the link. In one position, the longitudinal axis of the boom is at all times located rearwardly of a vertical plane extending through the boom pivot, while in the second position, the longitudinal axis is located forwardly of the vertical plane when the ram is fully retracted to define a transport position for the boom.

3,734,321

TRUCK LOAD BED BOAT LOADER AND CARRIER

Delmer B. Long, 3021 N.E. Johnson Street, and Lewis E. Shelton, 3010 N.E. Johnson Street, both of Roseburg, Oreg.

Filed Jan. 13, 1970, Ser. No. 2,583
Int. Cl. B60r 9/00
U.S. Cl. 214—450 **16 Claims**



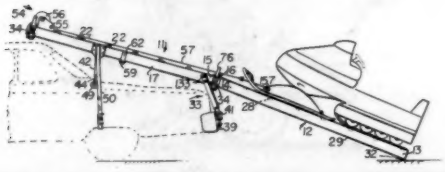
A ramp structure for support from the rear load carrying portion of a truck and including opposite side elongated and forwardly and upwardly inclined boat trailer wheel ramps and a center inclined guide rail along which a follower guidingly engaged therewith is movable. Removable inclined rearward wheel ramp extensions are provided for the rear ends of the wheel ramps and include rear end portions for support from the ground while the follower includes structure for removably coupling the front end of a boat trailer tongue thereto. Further, the ramp structure includes a forward elevated portion thereof from which a winch assembly is supported and the winch assembly includes a winch line for attachment to a rear portion, such as the axle assembly of a boat trailer.

3,734,322

FREIGHTING FRAMES FOR AUTOMOBILES

Wilfred Vaillancourt, 363 North Street, Sault Saint Marie, Ontario, Canada

Filed July 14, 1971, Ser. No. 162,363
Int. Cl. B60r 9/00
U.S. Cl. 214—450 **12 Claims**



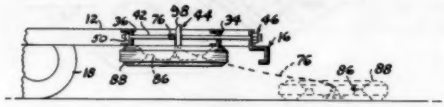
A freighting frame which is capable of being mounted upon an automobile having a rear bumper and a rear deck comprises two telescopingly nested rectangular elongate half-frames, one of which is a mounted half-frame, the other being withdrawable on rollers. By resting one end of the withdrawn half-frame on the roadway and pin-joining its forward end to the mounted half-frame an incline is provided along which heavy articles may be slid to load them. Each half-frame comprises a pair of longitudinal side beams having vertical webs and horizontal upper flanges spaced by transverse bars. The mounted half-frame is carried on a pair of rear posts fixed to the webs and adjustable in length and pivotedly secured on bumper brackets, and also carried by an intermediate pair of posts standing on resilient suction-cup feet adjacent the rear window. When in the transport mode the nested half-frames have their upper flanges clampedly interlocked at each end to rigidify the composite side beams so formed, permitting very light sheet metal construction — e.g., aluminum alloy — to safely carry larger loads at high vehicle speed.

3,734,323

SPARE TIRE LIFT AND HOLDER FOR A PICKUP TRUCK AND THE LIKE

Wayne E. Price, 401 S. Chickasaw, Pauls Valley, Okla., and William L. Waldrup, Route 4, Elmore City, Okla.

Filed Feb. 22, 1972, Ser. No. 227,853
Int. Cl. B62d 43/04
U.S. Cl. 214—451 **6 Claims**



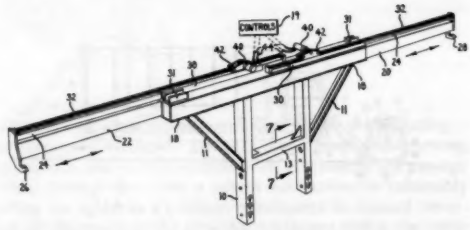
A crank rod extends horizontally through the rear bumper and a pair of body frame members which are spaced-apart a distance less than the diameter of the spare tire. A cable is secured, at one end, to the crank rod between the pair of frame members and is removably connected at its other end to the wheel of a spare tire. Rotation of the crank rod winds the cable therearound by a cable guide means and lifts the wheel and tire assembly to a horizontal stored position in which the tire resiliently abuts the depending limit of the pair of frame members. Ratchet means, engaging the outwardly disposed end of the crank rod, locks or releases the crank rod.

3,734,324

CONTAINER HANDLING FRAME

Peter D. Lynch, Portland, Oreg.; Dempsey R. Oldfield, Half Moon Bay, Calif., and Donald K. Zifka, Mill Brae, both of Calif., assignors to Hyster Company, Portland, Oreg.

Filed Aug. 5, 1970, Ser. No. 61,284
Int. Cl. B66f 9/14
U.S. Cl. 214—621 **1 Claim**



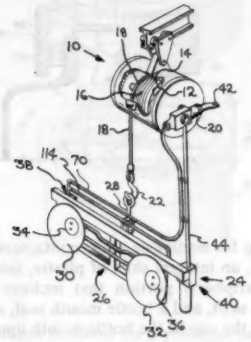
A frame for handling cargo containers is disclosed. A vertical member of the frame is mounted on the carriage of an industrial lift truck having an extensible mast. The housing at the upper end of the vertical member contains a pair of transversely extensible arms. Powered by a pair of hydraulic motors, these arms may be moved inwardly or outwardly along their longitudinal axis by the truck operator so as to position each arm to engage the upper corner fittings of a cargo container from one side. When thus positioned and engaged, the frame and truck may lift and move the cargo container.

3,734,325

SAFETY INTERLOCK FOR FLUID-OPERATED, LOAD-HANDLING APPARATUS

Charles W. Stone, Garden City, Mich., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Mar. 31, 1971, Ser. No. 129,863
Int. Cl. B66c 1/02
U.S. Cl. 214—658 5 Claims



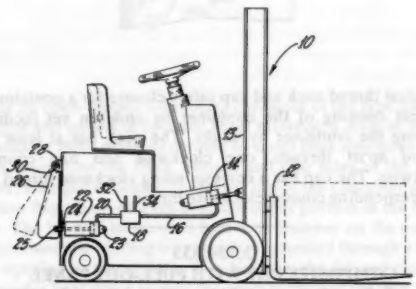
Load-handling apparatus is provided which includes a safety interlock to prevent the disengagement of a load when the apparatus is in an operative condition to balance or raise the load. The apparatus includes a fluid-operated hoist and a fluid-operated, load-engaging unit. A blocking valve is provided which is responsive to pressure of fluid for the hoist, which valve presents the load-engaging unit from disengaging the load when the pressure is at least equal to a predetermined value which is usually sufficient to at least balance the load.

3,734,326

VARIABLE CAPACITY LIFT TRUCK

Ernst S. Esser, Levittown, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed July 15, 1971, Ser. No. 162,894
Int. Cl. B66f 9/20
U.S. Cl. 214—674 6 Claims



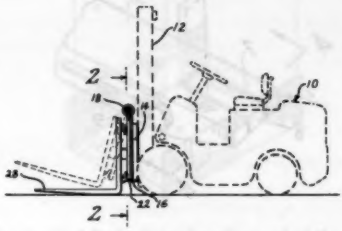
An industrial truck includes a shiftable counterweight for stabilizing the truck under various loading conditions. Means are provided for automatically shifting the counterweight in response to the load being supported by the lifting mechanism of the industrial truck and wherein the magnitude of counterweight movement is proportional to the magnitude of said load to thereby automatically position the counterweight for balancing the load.

3,734,327

LIFT TRUCK SIDE SHIFTING MEANS

William R. Ellis, Jr., 1056 Woodview Drive, Memphis, Tenn.

Continuation of Ser. No. 847,145, Aug. 4, 1969, which is a continuation-in-part of Ser. No. 591,759, Nov. 3, 1966, abandoned. This application Apr. 5, 1971, Ser. No. 131,422
Int. Cl. B66f 9/14
U.S. Cl. 214—730 16 Claims



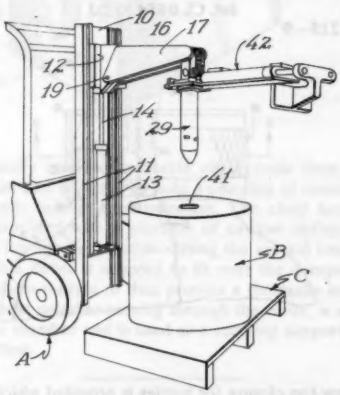
A side shifting means for lift trucks utilizing the horizontal support bar of shaft type fork mountings both as the support member for the forks and as the piston-cylinder for lateral shifting of the forks. By so doing, this allows the forks to pivot about the horizontal support bar and allows the front plate to be lifted upwardly for maintenance, without disengaging the piston from the remainder of the side shifting structure and reduces the load center loss.

3,734,328

ROLL LIFTER

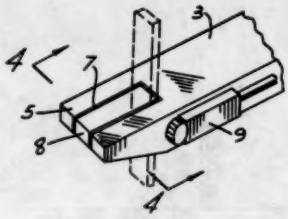
Herbert Francis Dalglish, 284 Cherokee Avenue, St. Paul, Minn.

Filed Jan. 6, 1972, Ser. No. 215,753
Int. Cl. B66c 1/54
U.S. Cl. 214—652 10 Claims



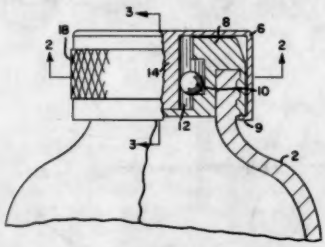
Apparatus to lift a roll of material or other object having a central opening comprising a probe designed to engage the inside walls of the center aperture of the roll which probe is pivotally mounted on an articulated bracket. The probe is held in position by a chain passing over the articulated bracket. As the bracket is pivoted upwards the probe is caused to pivot downward into a vertical position. In another embodiment a hydraulically actuated clamp is incorporated onto the probe so as to grasp the roll from the outside in conjunction with the internally grasping probe.

3,734,329
FORK LIFT TRUCK TINES
Leonard Greick, 12/37 E. Rosencrans Avenue, Space No. 35, Norwalk, Calif.
Filed Mar. 6, 1972, Ser. No. 232,008
Int. Cl. B66f 9/06
U.S. Cl. 214—750 2 Claims



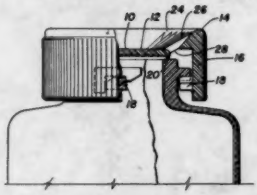
Each of a pair of auxiliary members is pivotally mounted in a channel formed at the free end of a corresponding one of the pair of lift members of a fork lift truck for movement in planes substantially perpendicular to the plane of the lift members. Control devices on the lift members position the auxiliary members in a selected one of a position coplanar with the lift members, a position extending above the plane of the lift members substantially perpendicularly thereto and a position extending below the plane of the lift members substantially perpendicularly thereto.

3,734,330
CHILD PROOF BOTTLE CAP
William E. Danner, 2 Drummond Street East, Perth, Ontario, and Laurence J. Ilines, 7 Feldbar Court, Willowdale, Ontario, both of Canada
Filed Nov. 22, 1971, Ser. No. 200,918
Claims priority, application Canada, Sept. 24, 1971, 123,624
Int. Cl. B65d 55/02
U.S. Cl. 215—9 5 Claims



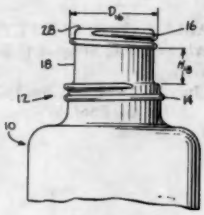
A screw-top closure for bottles is provided which must be turned upside down to be unscrewed. When the right way up the closure — which is constructed so as to fit a standard glass bottle and is complete in itself, requiring no modification or addition to the bottle or its screw-top — can be screwed up but can be turned endlessly without unscrewing. This is achieved by a two part construction having an inner shell with the screw thread on it and an outer shell for manual operation. The two are connected together by a ball bearing; the outer shell has an internal land which drives the ball bearing. It is only when the bottle is upside down and the outer shell is rotated anti-clockwise that the ball bearing finds a land to drive the inner screw thread containing shell.

3,734,331
SAFETY CAP
Amedio P. De Felice, 251 Florence Street, Leominster, Mass.
Filed Aug. 13, 1971, Ser. No. 171,469
Int. Cl. B65d 55/02
U.S. Cl. 215—9 5 Claims



A safety cap for bottles or other containers, said cap comprising a base, an integral skirt of plastic, said base having a connecting peripheral portion that inclines upwardly with respect to the skirt, and a bottle mouth seal, said skirt having means to lock the cap to the bottle mouth upon depression of the skirt and rotation of the cap, the connecting peripheral being flexible and resilient and comprising essentially a series of alternate depressions and ridges, of grooves and lands, and said depressions or grooves may provide thin diaphragm-like solid portions or alternatively apertures.

3,734,332
SAFETY CLOSURE
Norman H. Grulich, 800 Longview Road, Knoxville, Tenn.
Filed Dec. 1, 1971, Ser. No. 203,785
Int. Cl. B65d 55/02
U.S. Cl. 215—9 6 Claims

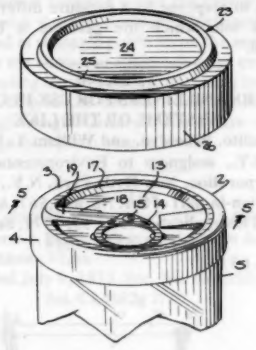


A dual thread neck and cap safety closure for a container to prevent opening of the container by children yet facilitate opening the container by adults. The neck has at least two spaced apart threads, one clockwise and one counterclockwise. The cap has a corresponding clockwise thread and a corresponding counterclockwise thread.

3,734,333
COMPOSITE CAP WITH PULL-OUT PANEL
George J. Foss, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 2, 1971, Ser. No. 130,591
Int. Cl. B65d 43/02
U.S. Cl. 215—46 A 18 Claims

A composite cap is disclosed which has an inner metal cover for sealing a container having a beaded mouth and which is adapted to receive an outer cap-like resealing plastic cover which snaps over the metal cover. The metal cap shell has a depending skirt which is fastened to the container bead. A tear-out panel is provided for removing the central portion of the metal cover. The tear-out panel is defined by a rip tab

which encircles the closure cover along a generally circular line at the container rim so that the tear-out panel leaves an opening providing full access to the contents of the container.



The rip tab includes portions on a recessed center panel as well as on the raised edge of the cap shell and extends along an inclined connecting ramp between the two levels.

3,734,334

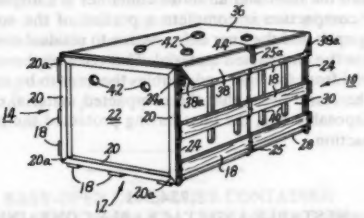
COMBINATION LINER AND LID FOR WIREBOUND CONTAINER

Joseph McCrea, Rockaway, N.J., assignor to Rockaway Corporation, Rockaway, N.J.

Filed Mar. 23, 1971, Ser. No. 127,282

Int. Cl. B65d *25/14*

U.S. Cl. 217—3 R **5 Claims**



For an open-topped wirebound container of the type having integral end panels of foldable sheet material, a drop-in insert of foldable sheet material divided by score lines into three sections which line the front, bottom and rear sides of the container, a hinged lid which covers the top of the container and a closure flap which extends over the upper portion of the front side. The lid may be secured by a loop fastener on the end of an intermediate binding wire which is extended through a central opening at the dividing line between the lid and closure flap and is bent down against the outer surface of the flap.

3,734,335

LOCKING CABINET ASSEMBLY

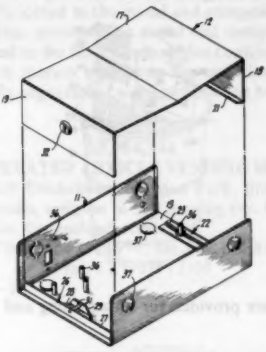
Dale Lincoln, Lafayette, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed June 28, 1971, Ser. No. 157,338

Int. Cl. B65d *7/00, 55/02*

U.S. Cl. 220—4 R **10 Claims**

Locking cabinet assembly comprising generally U-shaped base and cover sections disposed in opposite attitudes. Interlocking flange means is provided for securing one end of the cover section to the base section, and releasable locking



means is provided for locking the other end of the cover section to the base section.

3,734,336

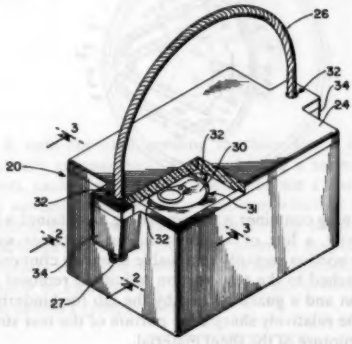
THERMALLY INSULATED PORTABLE CHEST

Norman N. Rankow, 1120 Benmore Avenue, Franklin Square, N.Y., and Jack Sloane, 25 Michael Road, Syosset, N.Y.

Filed May 19, 1970, Ser. No. 38,790

Int. Cl. B65d *1/24*

U.S. Cl. 220—21 **6 Claims**



A thermally insulated portable chest made from a rigid plastic foam and designed to hold a plurality of containers in the thermally insulated environment. The chest has a base member provided with a plurality of cavities defining compartments for snugly accommodating the several containers. A removable cover is adapted to fit over the compartments and containers therein to thus provide a thermally insulating seal. A handle member passing through the cover, is attached to the base member and is used as a carrying support for the portable chest.

3,734,337

SPIN CENTRIFUGE BASKETS

William H. Garrison, Richmond, Va., assignor to American Spin-A-Batch Company, Richmond, Va.

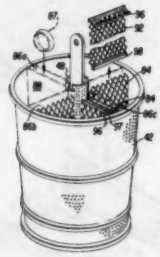
Continuation-in-part of Ser. No. 183,539, Sept. 24, 1971, Pat. No. 3,699.918, which is a division of Ser. No. 771, Jan. 5, 1970, abandoned. This application Oct. 13, 1971, Ser. No. 188,738

Int. Cl. B65d *25/06*

U.S. Cl. 220—22 **21 Claims**

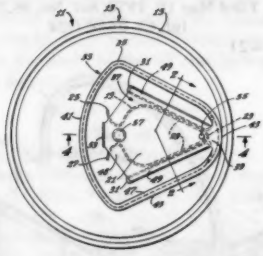
A perforate spin basket is compartmented by perforate walls extending radially from the axial center thereof. Com-

partment volume is modified by a plate member disposed within a selected compartment and attached to one of said



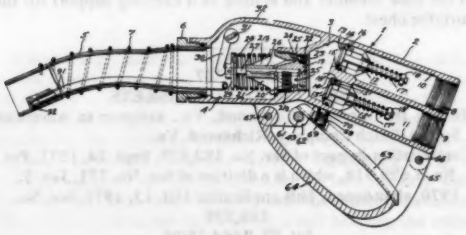
walls. Means are provided for lifting tilting and inverting the basket.

3,734,338
CAN END WITH NONDETACHABLE TAB
James R. Schubert, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Filed May 13, 1971, Ser. No. 143,129
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **14 Claims**



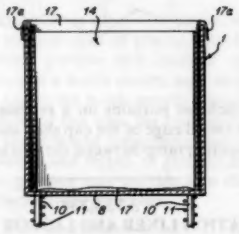
An easy opening container wall comprising a container wall of sheet material, a line of weakness in the container wall defining a tear portion partially removable from the container wall, a tab attached to the tear portion to initiate removal of the tear portion and a guard carried by the tab for hindering contact with the relatively sharp edge portion of the tear strip caused by the rupture of the sheet material.

3,734,339
GASOLINE DISPENSING NOZZLE
Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Sept. 21, 1971, Ser. No. 182,410
Int. Cl. B67d *5/08*
U.S. Cl. 222—56 **8 Claims**



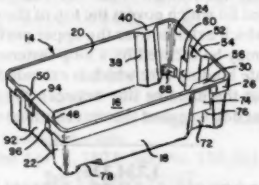
A gasoline dispensing nozzle has a poppet-type shutoff valve which is operated by means of a rotary shaft sealed into the nozzle housing, the rotary shaft being rotated through a mechanical linkage which is coupled between the said shaft and a manual operating handle. Automatic shutoff of the gasoline flow is effected by means of a diaphragm which is mechanically coupled to the aforementioned linkage and which moves in response to a pressure differential produced when a tank into which the gasoline is being dispensed becomes "full."

3,734,340
CONTAINERS AND LINERS FOR USE IN COMPACTING SYSTEMS OR THE LIKE
Amos D. Ippolito, Brooklyn, and William Y. L. Ma, Yonkers, both of N.Y., assignors to Environmental Pollution Research Corporation, New Hyde Park, N.Y., by said Ippolito
Continuation-in-part of Ser. No. 847,567, Aug. 5, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,711
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **13 Claims**



A container for use with a compacting system includes spring loaded retractable wheel mechanism on the bottom thereof to facilitate handling of the container. The wheels are automatically retracted during the compaction operation due to the pressure of compaction. A liner to enable disposable bags to be more expeditiously used is preferably square in shape and is fabricated of plastic material or the like. Located between the liner and an outer container is a disposable bag. After compaction is complete a portion of the container is swung open and the liner deforms due to residual compression force in the compacted material. This releases the compacted material from the liner and enables the liner to be easily lifted out, the result being that the compacted material remains in the disposable bag, the liner having protected the bag during compaction.

3,734,341
NESTABLE AND STACKABLE CONTAINER
Alvin W. Levenhagen, Linesville, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed July 12, 1971, Ser. No. 161,621
Int. Cl. B65d *21/04*
U.S. Cl. 220—97 D **9 Claims**



An open top integral container capable of being either nested or stacked with another similar container. The container has a substantially horizontal bottom and four substantially upright sides. Each of the sides are connected to the bottom and to two other of the sides. First means are formed on

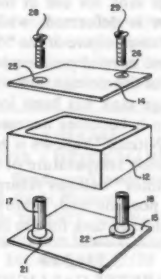
the interior surfaces of the sides to support the similar container when the similar container is received within the container in either a nested or a stacked position. Second means are formed along the exterior surfaces of the sides for being contacted by the similar container to support the container when the container is received within the similar container in either a nested or a stacked position. Thickened reinforcing means are located at strategic positions on the container structure to reinforce the container against damage caused by both externally originating impacts occurring during container handling and by loading forces caused when the containers are stacked with high weight density loads or are nested many times high in large load producing columns.

3,734,342

BOX ENCLOSURE FOR ELECTRICAL CIRCUITS

William L. Patterson, Berlin, Mass., assignor to Adams-Russell Co., Inc., Waltham, Mass.

Filed July 9, 1971, Ser. No. 161,053
Int. Cl. H02g *3/10*
U.S. Cl. 220—3.94 **2 Claims**



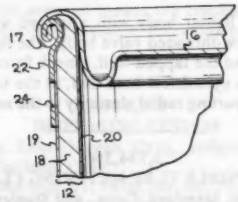
A box enclosure for electrical circuits formed of a unitray rectangular side wall and top and bottom cover plates. A pair of tubular internally threaded rivets are fastened through the bottom cover plate at diagonally opposite corners, the upper plate having holes through it at the corresponding corners and being fastened in place by screws engaging the internally threaded rivets.

3,734,343

EASY-OPEN COMPOSITE CONTAINER

Edwin D. Griffith, Pemberville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 21, 1971, Ser. No. 155,315
Int. Cl. B65d *43/02*
U.S. Cl. 220—47 **1 Claim**



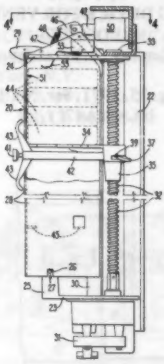
An easy-open composite container is provided and comprises a composite can body, a pair of metal ends, and an opening tab (either plastic, metal, or a combination of materials) which are combined in such a manner so as to facilitate opening of the composite container by pulling up on the opening tab. One of the metal end components is thereby completely removed from the composite container body by the upward force exerted on the opening tab. The opening tab is mechanically joined to the metal end component by double seaming or other process. The metal end component may be easily reapplied to the fiber can body for continued packaging of the contents therein by forcing the end closure back into compression fit engagement with the fiber can body.

3,734,344

COIN OPERATED ARTICLE VENDING MACHINE

Edward Lindell Teichelman, Norman Park, Brisbane, Queensland, Australia, assignor to Self Serving Pty. Ltd., Newmarket, Brisbane, Queensland, Australia

Filed June 25, 1971, Ser. No. 156,816
Int. Cl. G07f *11/00*
U.S. Cl. 221—14 **3 Claims**



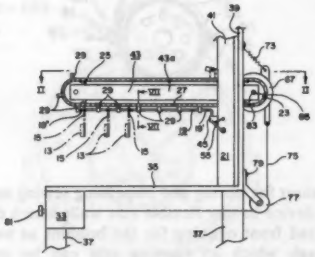
A coin-operated vending machine has a cabinet with a delivery compartment and containing a series of dispensing units, each having a magazine to contain a stack of articles to be vended supported by a platform which is elevated by an electric drive, interrupted when the top article is raised to a discharge station at a top outlet from the magazine. An ejector operates on prepayment of coins and operation of a selector switch to eject the top article from the selected magazine to the delivery compartment.

3,734,345

PRODUCT VENDING APPARATUS

Lue O. Garner, 1698 N.E. 175th Street, North Miami Beach, Fla.

Filed June 2, 1971, Ser. No. 149,240
Int. Cl. B65g *15/00*
U.S. Cl. 221—81 **9 Claims**



A coin-operated device for vending a product which typically is packaged on a card having a hole adjacent one edge

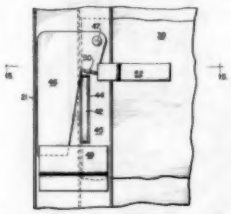
thereof so the card may normally be conveniently suspended and/or displayed on a hook arrangement. The device includes a horizontally positioned rod for holding a plurality of the cards, i. e., the rod extends through the hole in each card and is suitably supported by a frame member, sprocket and chain structure conveniently fitted to the frame structure and juxtaposed above the rod so that the lower flight thereof is parallel thereto, a plurality of fingers attached to the chain at uniform intervals thereon and arranged to jut outwardly therefrom to overlap the rod in turn, drive structure selectively driving the sprocket and chain structure, and coin operated structure which engages and operates the drive structure cyclically for remotely indexing the fingers, thus causing them to eject the cards singularly off one end of the rod. The cards are then intended to be delivered in a typical vending machine manner, e. g., gravitate through suitable chutes, etc., to facilitate ease in assuming possession by the purchaser.

3,734,346

LOCK BLOCKING DEVICE FOR VENDING MACHINE CLOSURES

Thomas O. Yingst, Conway, Ark., assignor to Polyvend, Inc., Conway, Ark.

Filed Aug. 25, 1971, Ser. No. 174,794
Int. Cl. A47f *1/00*
U.S. Cl. 221—101 **8 Claims**



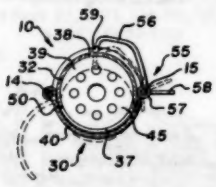
A gravity operated, lock blocking device for one door of a pair which is disabled upon the closing of the second door.

3,734,347

BOBBIN DISPENSER

Helen Dunbar, 6755 Fraser Street, Vancouver 15, British Columbia, Canada

Filed May 13, 1971, Ser. No. 143,040
Int. Cl. B65g *59/00*
U.S. Cl. 221—134 **2 Claims**



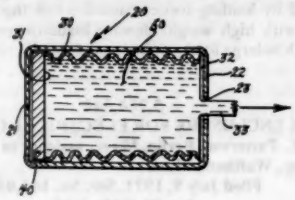
A dispenser for storing and dispensing sewing machine bobbins, the device having flexible side walls which define an infeed-outfeed front opening for the bobbins as well as a rear slot through which an ejecting arm can be entered. The dispenser has an ejector mechanism which can be actuated to enter the slot and exert pressure on a bobbin to thrust it out of the infeed-outfeed opening against the light resistance offered by the flexible side walls.

3,734,348

METHOD OF EXPELLING LIQUID PROPELLANT FROM A STORAGE TANK IN A LIQUID ROCKET

Howard M. White, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 23, 1971, Ser. No. 183,184
Int. Cl. G01f *3/20*
U.S. Cl. 222—1 **2 Claims**



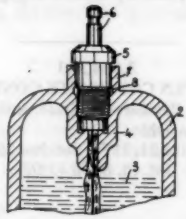
A bellows of "55-Nitinol" metal within a liquid propellant storage tank in a liquid rocket is used to expel liquid propellant from the storage tank for use in the liquid rocket. The "55-Nitinol" bellows is deformed, while at a temperature below the transition temperature of the "55-Nitinol," from the fully expel natural and normal position to the position necessary to permit filling of the storage tank with the liquid propellant. After the storage tank has been loaded with the liquid propellant, and when it becomes necessary to use the liquid propellant, the "55-Nitinol" bellows is heated to a temperature above the transition temperature of the "55-Nitinol." As a result, the "55-Nitinol" bellows returns to the fully expel natural and normal position and, thereby, expels the liquid propellant from the storage tank for use in the liquid rocket.

3,734,349

CIGARETTE GAS LIGHTER

Jean Gaston Tricot, 53, Rue du Val d'Osne 94, Saint-Maurice, France

Filed Feb. 11, 1971, Ser. No. 114,572
Claims priority, application France, Feb. 12, 1970, 7005085
Int. Cl. F23d *3/00*
U.S. Cl. 222— **1 Claim**



Cigarette gas lighter body with a tapped well for engagement with a screw-threaded valve body. The lighter body has, above and around the tapped well, a neck formed by an outer extension with a cylindrical bore and, at the base thereof, an inner groove imparting radial elasticity to the neck.

3,734,350

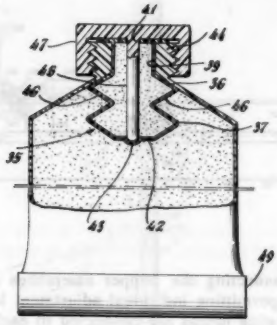
COLLAPSIBLE TUBE METERING CLOSURE

Neil S. Waterman, Stamford, Conn., and Stanley F. Lachowicz, New Britain, both of Conn., assignors to Atlantic Design & Development Corporation, Stamford, Conn.

Filed Aug. 16, 1971, Ser. No. 171,813
Int. Cl. B65d *35/40*
U.S. Cl. 222—92 **8 Claims**

A movable plastic insert installed within the neck of a collapsible metal tube is engaged by an inwardly extending

protrusion on the underside of a screw cap and is downwardly displaced within the top of the tube when the cap is screwed onto the tube end. Upon removal of the screw cap subsequent manual pressure applied to the collapsible tube body forces a



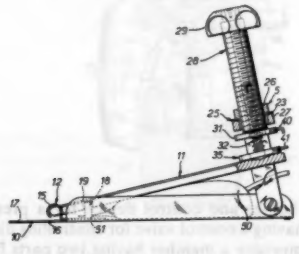
limited amount of the contents, between the movable insert and the top of the tube out through the tube opening while the movable member moves upwardly to close the opening and prevent excess material from being extruded.

3,734,351

PRESS FOR A DEFORMABLE BAG

Jean Joseph Gaudin, Bordeaux-Cauderan (Gironde), France, assignor to LABAZ, Paris, France

Filed July 26, 1971, Ser. No. 166,112
Claims priority, application France, Aug. 3, 1970, 7028554
Int. Cl. B65d *35/28*
U.S. Cl. 222—103 **4 Claims**



A press for a deformable bag, particularly a blood bag, has two flaps articulating on a common hinge and urged together by pressure means to clamp a bag placed between them. Associated with the pressure means are control means adapted to make a determined pressure threshold perceptible to an operator.

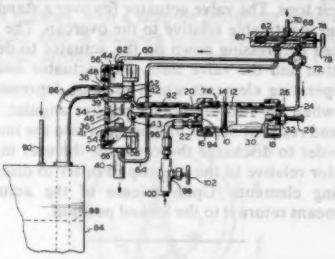
3,734,352

DISPENSING SYSTEM

Dan W. Dooley, Lake Oswego, Oreg., assignor to Kenneth E. McCarthy, Portland, Oreg.

Filed Sept. 11, 1970, Ser. No. 71,399
Int. Cl. G01f *11/06*
U.S. Cl. 222—148 **6 Claims**

A dispensing system for viscous substances includes a pneumatically operated dispensing cylinder and a pilot-operated spool valve which are both controlled by a common control valve. In one position of the control valve, a substance to be dispensed is forced through the pilot-operated spool valve into the dispensing cylinder. In a second position of the control valve, the dispensing cylinder forces a charge outwardly



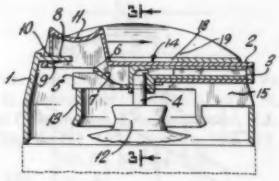
through the pilot-operated valve, which is controlled for providing an outlet for the dispensed substance.

3,734,353

ACTUATOR OVERCAP

Dudley F. McIlhenny, New York, N.Y., assignor to Clairol Incorporated, New York, N.Y.

Filed July 13, 1971, Ser. No. 162,102
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **7 Claims**



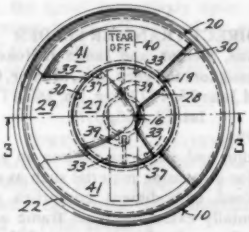
An actuator overcap for an aerosol container including an actuator member having an elongate spout slidably receiving an elongate nozzle which communicates with a valve stem extending from the aerosol container, the actuator member being slidable in a top portion of the overcap between an inoperative position with the spout withdrawn into the overcap to inhibit dispensing from the aerosol container, and an operative position with the spout extending from the overcap to permit movement of the valve stem to dispense material from the aerosol container.

3,734,354

CHILD PROOF OVERCAP AND ACTUATOR FOR AN AEROSOL CAN

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed May 31, 1972, Ser. No. 258,354
Int. Cl. B65d *83/14*
U.S. Cl. 222—153 **3 Claims**



A child-proof overcap and valve actuator for an aerosol can of the conventional type which has a central valve stem and an

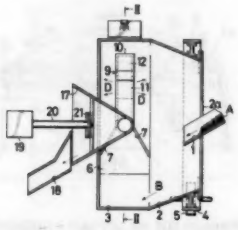
annular valve seam at the upper end of the can. The overcap and valve actuator are telescoped and have similarly contoured finger recesses and spray discharge openings extending across their tops. The valve actuator fits over a standard valve button and is rotatable relative to the overcap. The valve can be actuated by pressing down on the actuator to depress the valve button and the valve stem. The actuator and overcap have cooperating elements which prevent depression of the actuator when the two are in one relative angular, "locked" position and resilient means to bias them into the locked position. In order to discharge the contents, the user must rotate the actuator relative to the overcap in order to disengage the cooperating elements. Upon release of the actuator, the resilient means return it to the locked position.

3,734,355

APPARATUS FOR FEEDING ARTICLES AT CONSTANT RATE

Harumi Yamada, Kashihara, Japan, assignor to Koyo Lindberg Hevi Duty Company, Limited, Osaka, Japan

Filed Aug. 10, 1971, Ser. No. 170,506
Claims priority, application Japan, Aug. 14, 1970, 45/71646
Int. Cl. B67d *5/64*
U.S. Cl. 222—167 **3 Claims**



A rotatable drum for receiving articles to be measured out is formed with a recess defined by an outwardly jutting wall of the drum and a passage communicating with the recess. A measuring section includes an independent compartment within the drum formed with a window and has a measuring member whose position is adjustable with respect to the window to control the volume of the articles to be determined by the measuring section. Due to the rotation of the drum, the articles are collected in the recess and then carried through the passage to the measuring section, where the measuring member receives the articles at the adjusted position and permits a constant amount of the articles to be sent into the compartment. An excess amount of the articles are sent back to the interior of the drum through the window. The articles in the compartment are then sent out of the drum by way of a delivery path.

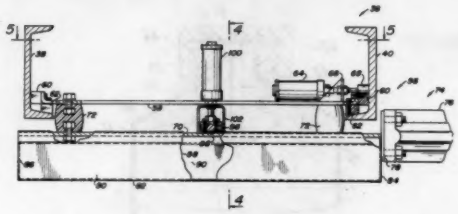
3,734,356

DIRECT TRANSFER SEEDER

Richard L. Morine, Mentor, and James J. Hokes, Lakewood, both of Ohio, assignors to Fedco, Inc., Mentor, Ohio

Filed June 28, 1972, Ser. No. 267,117
Int. Cl. B65g *3/12*
U.S. Cl. 222—199 **13 Claims**

The specification and drawings disclose an apparatus particularly suited for dispensing material such as seeds and the like. The disclosed embodiment comprises an elongated generally horizontally extending main frame adapted to be positioned over the path of movement of the surfaces on which the material is to be deposited. Carried by the main frame are a plurality of hopper assemblies each including a downwardly facing wall open in a pattern corresponding to the surfaces on which material is to be deposited. Reticulated means such as wire mesh are connected across the open pattern. Each of the hopper assemblies are carried from the main frame by support means including connecting means for releasably connecting the hopper assemblies to the main frame while permitting individual adjustment longitudinally thereof. Vibrating means are connected to each hopper assembly for applying high frequency, short amplitude vibrations thereto.

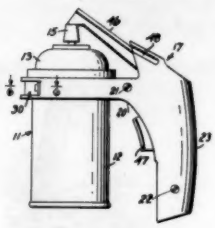


3,734,357

PORTABLE HOLDER FOR PRESSURIZED CONTAINERS

Nello Batistelli, Downey, and James P. S. Adams, Palos Verdes Estates, both of Calif., assignors to said Batistelli by said Adams

Filed Sept. 10, 1971, Ser. No. 179,405
Int. Cl. B05b *11/00*
U.S. Cl. 222—323 **3 Claims**



A combined holder and control device for a pressurized fluid container having a control valve for controlling discharge of the fluid, comprising a member having two parts fastened together to form a handle, the parts having flexible facing semi-circular arms which together are adapted to fit over a beaded formation on the container and a clamping device for flexing the arms inwardly to grip the container, together with an actuating arm operable by squeezing the handle to actuate the valve.

3,734,358

MEANS FOR APPLYING SUCTION HAVING AUTOMATIC CUTOFF OF DISPLACEMENT VOLUME

John A. Bergeron, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 27, 1971, Ser. No. 166,520
Int. Cl. G01f *23/04*
U.S. Cl. 222—326 **3 Claims**

A device is described herein for successively applying pressure and suction to a volume in flow communication

therewith. The device is preferably applied to introducing liquid into and permitting the drainage of liquid from, the in-

ternal volume of a hollow longitudinally-extending member; (e.g. a disposable sterile pipette).

3,734,359

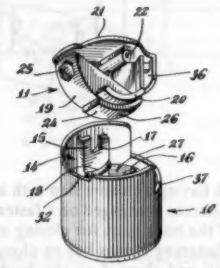
LIQUID CONTAINER DISPENSING CLOSURE

Neil S. Waterman, Stamford, Conn., assignor to Atlantic Design & Development Corporation, Stamford, Conn.

Filed Oct. 27, 1971, Ser. No. 193,024

Int. Cl. B67d *3/00*

U.S. Cl. 222—484 **5 Claims**



A bottle cap for the controlled dispensing of liquid contents is fabricated from two molded plastic parts, one being a cap member for sealing engagement with the lip of a bottle, and the other being a pivotal cover member mounted in the cap and which pivots with snap action into either closed or open positions by the simple application of finger pressure to the rear portion of the cover member. A semi-soft resilient plastic material is molded into one of the abutting arcuate surfaces, either of the pivotal closure member or of the bottle engaging cap member, to effect a high pressure seal therebetween in the closed position. An orifice in the cap is aligned with a spout opening in the cover when in the open position, and is sealed when the cover is closed.

3,734,360

INSTANT DIAL-A-FLOW CAP

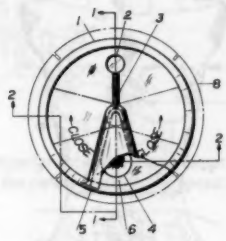
Roland Clough Brown, 425 Stratford Court, Del Mar, Calif.

Filed June 21, 1971, Ser. No. 154,794

Int. Cl. B67d *3/00*

U.S. Cl. 222—537 **1 Claim**

An instant dial-a-flow geometrically-shaped cap for liquid containers consisting of a molded spout in one sector with a vent passage and hole diametrically opposite to smooth the flow of the liquid contents of the container when pouring or drinking, if potable, with a snap-on perimeter featuring a serrated edge for ease in grasping to dial, snap-on or snap-off or follow CLOSE arrows when dialing full or partial flow or clo-



sure. A snap-on under disc with varying openings and closure for lift-out top cans is contemplated as well as full quadrant turning of the cap for square cans. The cap is pollution free as it is not discarded but instead washed and reused. Assembly of the cap and/or disc and dialing is noiseless. With no wearing parts no maintenance is required.

3,734,361

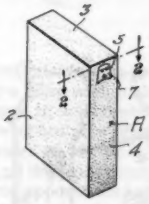
POURING SPOUT LOCK

Henry J. Brucker, Summit; Robert J. Brucker, Basking Ridge, and Milton H. Klausmann, Mendham, all of N.J., assignors to Seal-Spout Corporation, Liberty Corner, N.J.

Filed Nov. 1, 1971, Ser. No. 194,117

Int. Cl. B65d *47/00*

U.S. Cl. 222—556 **6 Claims**



A pouring spout formed with a body and side walls is hinged at one end to one end of a discharge aperture in a package wall and swingable selectively in opposite directions to open and close the aperture, respectively, and a safety lock includes either stop lugs on the spout side walls which engage said package end wall and to limit the opening of the spout, or notches in the edges of said side walls, with which are coactive a locking element on the package actuatable to lock the spout or to release the spout respectively upon application and release of pressure on the side walls of the package, or upon limited sliding of the spout in a plane parallel to the plane of said end wall, or upon movement of the locking element relative to the spout.

3,734,362

DRESSMAKING FORMS

Eric Richard Arthur, 94 Baston Road, Hayes, England

Filed Aug. 26, 1971, Ser. No. 175,080

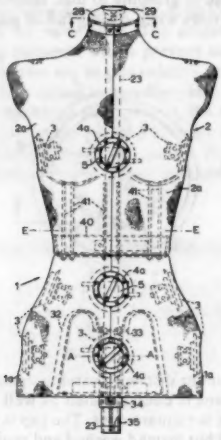
Claims priority, application Great Britain, Aug. 26, 1970, 41124/70; Sept. 2, 1970, 41932/70

Int. Cl. A41h *5/00*

U.S. Cl. 223—68 **2 Claims**

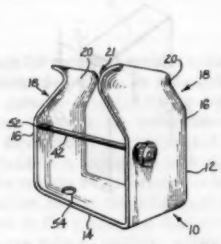
A dressmaking form comprising neck, bust, waist and hip portions, each of said portions consisting of a plurality of sec-

tions which are radially adjustable to increase or decrease the overall circumferential size of the portion by moving setting



mechanism against appropriate dials, the waist and hip portions being relatively adjustable vertically to allow for different depths of waist sizes.

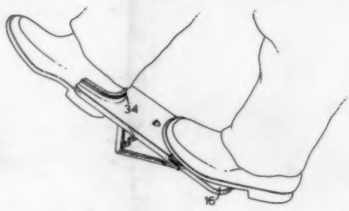
3,734,363
BOOT JACK DEVICE
Walter Dorwin Teague, Jr., Tweed Boulevard, Nyack, N.Y.
Filed June 16, 1971, Ser. No. 153,532
Int. Cl. A47j *51/02*
U.S. Cl. 223—116 **14 Claims**



A boot jack is disclosed which is formed from a generally U-shaped frame member having a bight portion which defines a pedal or stirrup member at the base of the frame and a pair of spaced generally upstanding leg members which extend therefrom. The leg members each have a free end portion and define a space therebetween above the pedal for receiving the rear portion of a boot and shoulder means are formed at the free end portions for engaging the boot inserted in the space between the free end portions to facilitate removal of the boot from the foot of a wearer.

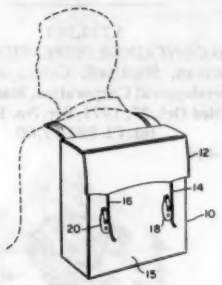
3,734,364
BOOTJACK
Nicholas Mayer, 86 Grenfell Street, Oshawa, Ontario, Canada
Filed May 19, 1972, Ser. No. 255,008
Int. Cl. A47j *51/02*
U.S. Cl. 223—116 **4 Claims**

A-simultaneously collapsible and extensible bootjack comprises in combination a heel accommodating plate and a stabilizing plate, the two being in slidable relationship, and an understructure for supporting said plates in an operative inclined position, such understructure lying in flat collapsed relation-



ship against the plates when these are in optimum overlapping relationship, the understructure being hingedly connected to the said plates.

3,734,365
BACK PACK AND FASTENER
Donald H. Sprecker, 291 Prospect Street, Northampton, Mass.
Filed Feb. 10, 1972, Ser. No. 225,182
Int. Cl. A45f *3/00*
U.S. Cl. 224—8 R **5 Claims**

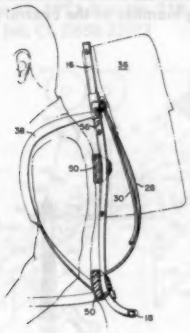


A back pack having a closure flap with at least one fastening line attached thereto is engaged on a fastening means attached to the back of the back pack for closing and securing the flap thereof. The fastening means has an elongated body member secured at one end thereof to the back pack, and a post located near the second end of the body member which is secured thereto and to the back pack, with the post and body member forming a pulley-like element with the body member adapted to receive the line and place tension thereon when the line is pulled over the post. An ear protruding from the second end of the elongated body member and extending toward the first end thereof forms a notch with the body member which is adapted to receive and wedge therein the line which holds the flap closed under tension.

3,734,366
PACK FRAME
Thomas E. Wood, 3863 42nd N.E., Seattle, Wash.
Filed Feb. 11, 1972, Ser. No. 225,467
Int. Cl. A45f *3/00*
U.S. Cl. 224—25 A **9 Claims**

A lightweight pack frame constructed of rigid polyvinyl chloride or like material including in one embodiment a molded U-shaped major support member, the legs of the "U" being joined by a curved, transverse extending support member which is adjustably mounted thereon to allow the size of the pack frame to be changed. A pair of flexible rods are end mounted to extend between the lower portion of the U-

shaped major support member and the transverse support member such that they are bowed outwardly from the plane of



the U-shaped support member to springingly hold a pack bag mounted on the frame away from the wearer's back.

3,734,367

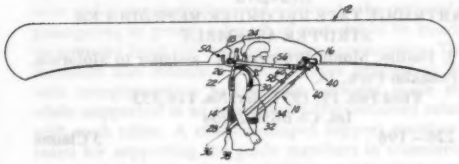
CANOE CARRIER

William S. Jackson, 308 Packard Road Apt. No. 1, Ann Arbor, Mich.

Filed Jan. 25, 1972, Ser. No. 220,584

Int. Cl. A45f *3/15*

U.S. Cl. 224—25 A **10 Claims**



Apparatus to be worn by an individual for carrying a canoe in an inverted position and simultaneously to be used for carrying a pack. The apparatus comprises a pack carrier adapted to be strapped to the back of the individual, and includes arms pivotally connected to the lower portion of the pack carrier and having attachment means at the distal ends of the arms for attachment to a transverse strut of the canoe. The pack carrier has second attachment means for pivotally supporting a second strut of the canoe.

3,734,368

MAGNETIC TAPE RECORDER WITH CONSTANT TAPE TENSION

Stefan Kudelski, Ch. de la Croix, 1052 Lemont-sur-Lausanne, Switzerland

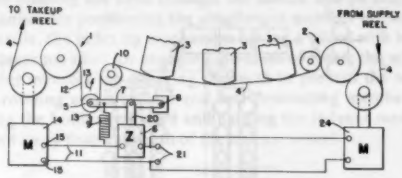
Filed Nov. 26, 1971, Ser. No. 202,478

Claims priority, application Switzerland, Nov. 27, 1970, 17582/70

Int. Cl. B65h *25/04*

U.S. Cl. 226—44 **11 Claims**

A magnetic tape recorder having a tape tension regulator for maintaining a constant tension on the tape while recording, reproducing or erasing. A resiliently mounted pulley is



coupled to an impedance in the motor input circuit so that a displacement of the pulley controls the speed of the motor.

3,734,369

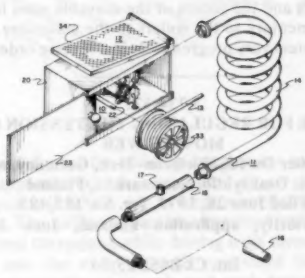
WELDING FILLER MATERIAL FEED APPARATUS

Robert P. Johnson, 7237 South 129th Street, Seattle, Wash.

Filed Nov. 1, 1971, Ser. No. 194,296

Int. Cl. B65h *17/20*

U.S. Cl. 226—134 **2 Claims**



The welding filler material feeding apparatus of the present disclosure comprises a filler wire guide, a driving box, and electric control means to selectively control the flow of material from the driving box. The filler wire guide includes a flexible conduit provided at one of its terminal ends with a rigid barrel and a tip on the rigid barrel, the tip being tapered toward its terminal end opposite the barrel engaging end. The driving box is attached at one of its terminal ends to the terminal end of the flexible conduit. The drive box includes a drive means comprising a motor having a motor wheel with a concave curved groove and suitable spur gear-like teeth at one of its terminal ends and having an idle wheel provided parallelly directly over the motor wheel, with a concave curved groove and a complementary set of spur gear-like teeth operable to engage the motor wheel gear teeth; and a spindle operable to receive a spool of filler wire disposed in the box.

3,734,370

ACCUMULATOR FOR STRIP-LIKE MATERIAL

Charles Storer Shumaker, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed Oct. 28, 1971, Ser. No. 193,328

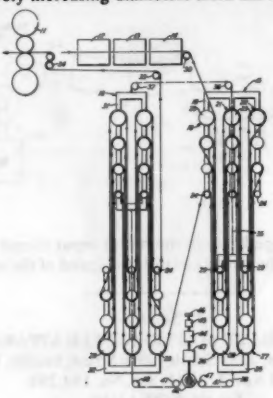
Claims priority, application Great Britain, Dec. 30, 1970, 61,703/70

Int. Cl. B65h *17/42*

U.S. Cl. 226—119 **3 Claims**

The disclosure this thiy invention relates to an accumulator for strip-like material, such as steel sheet gauge stock issuing to a strip processing apparatus. The accumulator is shown located before a rolling mill and comprises two independent, but cooperative units, each including three stationary vertical spaced-apart rows of strip supporting rollers between which

rows may be located two movable similar rows of strip supporting rollers; the rollers of the stationary rows varying in progressively increasing diameters from the side adjacent the



movable rolls and the rollers of the movable rows having rollers complementary to the rollers to the stationary rows, but whose diameters vary progressively in a reverse order.

3,734,371

DEVICE FOR REGULATING THE TENSION OF A MOVING WEB

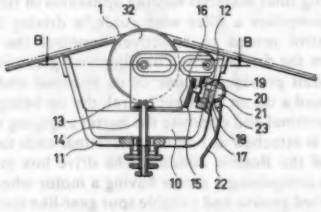
Gerhard Walter Dorfel, Wielheim-Teck, Germany, assignor to Ahlstrom A. Osakeyhtio, Noormarkku, Finland

Filed June 28, 1971, Ser. No. 157,485

Claims priority, application Finland, June 30, 1970, 1846/70

Int. Cl. B65h *23/08*

U.S. Cl. 226—109 **3 Claims**



An equalizer which includes several rollers placed next to each other on one side of the web in the transversal direction of the web, the rollers being attached with bearings between the branches of bearing forks which can be essentially fitted perpendicular and adjusted in relation to the web, and possibly also including a spreader, fitted in front thereof is disclosed.

3,734,372

APPARATUS FOR FOLDING FLEXIBLE SHEET

Takeshi Ebisu, Matsubara-Kudaru Manahon-Bushi, Kyoto, Japan

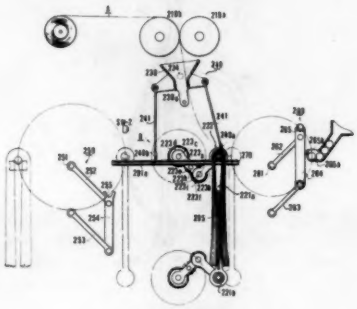
Filed Nov. 29, 1971, Ser. No. 202,818

Claims priority, application Japan, Nov. 30, 1970, 45/106191; Nov. 30, 1970, 45/106192; Dec. 29, 1970, 45/125816; Mar. 16, 1971, 46/14287

Int. Cl. B65h *45/20*

U.S. Cl. 226—114 **13 Claims**

An apparatus for folding a belt-like flexible sheet comprises a feeder for downwardly feeding said flexible sheet, a plurality of sheet-hanging members, an actuator for reciprocatingly moving one of said sheet-hanging members across a vertical plane along which the flexible sheet is fed so that the sheet is folded in zigzag with the folded portions thereof supported to the sheet-hanging member at the central position of a folding



span, means for successively taking out the sheet-hanging member together with a prescribed fold unit of the flexible sheet from an area in which the actuator is operated, and means for supplying another sheet-hanging member into said area when it is vacant.

3,734,373

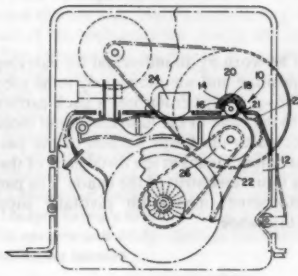
CARTRIDGE TAPE RECORDER/REPRODUCER STRIPPER ASSEMBLY

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 19, 1971, Ser. No. 116,933

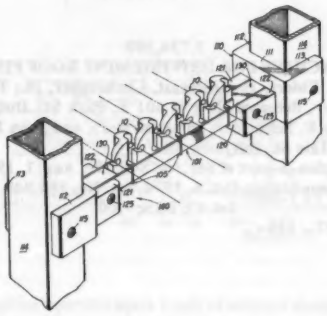
Int. Cl. B65h *23/04*

U.S. Cl. 226—196 **3 Claims**



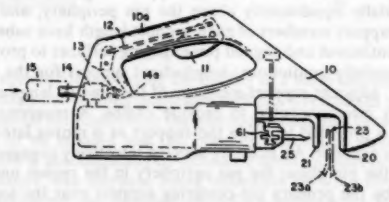
A stripper assembly for maintaining a minimum clearance between the capstan shaft and stripper edge in a cartridge tape recorder and/or reproducer, which includes a body having resilient fingers or annular base portions for connecting the stripper member in spaced relation to the capstan shaft. A projection on the wall of the body engages the capstan shaft support to hold the stripper member in a fixed position with respect to the capstan shaft. The annular base portions or fingers include bearing members for a close running fit with said capstan shaft.

3,734,374
GUIDE ASSEMBLY
Cooper Perry, Roanoke, Ala., assignor to Batson-Cook Company, West Point, Ga.
Filed Jan. 17, 1972, Ser. No. 218,381
Int. Cl. B65h 23/32
U.S. Cl. 226—199 19 Claims



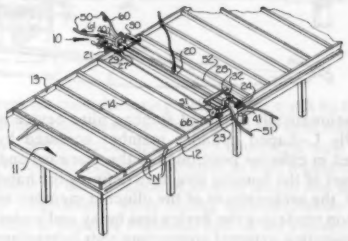
An assembly for use in guding continuous lengths of material, the assembly being constructed of a plurality of guide members, each having an integrally formed body defining oppositely directed material guiding notches. The guide members are constructed so that the two oppositely directed notches are located in spaced parallel planes, and detailed in location relative to each other when assembled whereby one material guiding notch of one guide member is coaxially aligned with an oppositely directed material guiding notch of an adjacent guide member to define a material guiding passageway. The two aligned notches are axially spaced relative to each other to define a material threading passageway which communicates with and is angularly disposed relative to the material guiding passageway to permit a length of material to be inserted into or removed from the material guiding passageway. The guide members also include formed surfaces adapted to interlock with complementary surfaces on adjacent guide members whdn uupported in an assembled juxtapositioned relationship with each other. A channel-shaped support member is provided for supporting the guide members in transverse alignment and in juxtaposition relative to each other so that the formed surfaces are in interlocking relationship. Spacer means is operatively associated with the channel-shaped support member so that the guide members can be transversely adjusted to a selected set position and can be spaced relative to each other to permit selected guide members to be independently added or removed.

3,734,375
FASTENER INSERTING MACHINE
Arnold R. Bone, Needham, and Ronald W. Krohn, Marlboro, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.
Filed May 27, 1971, Ser. No. 147,529
Int. Cl. B65c 7/00
U.S. Cl. 227—67 25 Claims



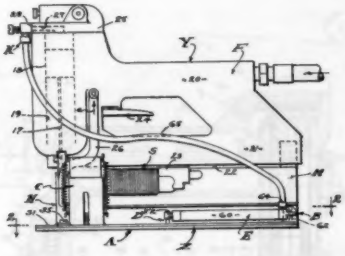
A machine for inserting an attachment member having a filament with a head on either end through an opening in an article, said machine including a clamp for holding the article, a needle for penetrating through the article and having a slot for permitting a head of the filament to slide therethrough, a rod for pushing the head through the needle and an indexing mechanism for positioning the attachment member in front of the needle, the indexing mechanism having a wheel with teeth, an indexer member for engaging the teeth to rotate the wheel, a holder member for engaging the teeth to prevent the wheel from rotating and a release rod and connecting member for moving the holder rearward and causing the indexer member to pivot away from the teeth of the indexer wheel.

3,734,376
WALL FRAME CONSTRUCTION APPARATUS
William D. Abernathy, Route 2, Vale, N.C.
Filed Feb. 16, 1971, Ser. No. 115,463
Int. Cl. B27f 7/02
U.S. Cl. 227—111 7 Claims



Rough wall frames for building erection are constructed by a nailing apparatus which is supported on an elongate plate and elongate sole which are to form a portion of the rough wall frame. The nailing apparatus supported on the plate and sole is moved therealong while driving nails through the plate and sole into the ends of studs positioned therebetween, thereby securing the plate, sole and studs together into the wall frame.

3,734,377
PART FEEDING ATTACHMENT FOR FASTENER DRIVING TOOLS
Ben Munn, 8218 Delongpre Avenue, West Hollywood, Calif.
Filed July 19, 1971, Ser. No. 163,665
Int. Cl. B27f 7/02
U.S. Cl. 227—120 20 Claims



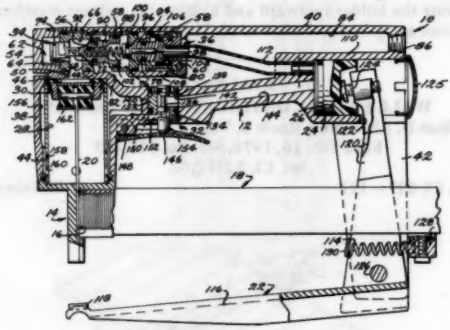
A part feeding attachment combined with a fastener driving tool to advance one part at a time into position to be embraced and/or pierced by a fastener delivered by said tool; especially for pneumatically powered tools driving staples and the like and to advantageously utilize exhaust air to effect automatic operation; the attachment being universally adaptable to tools of varied type and of different manufacture, and characterized by its light weight and minimized space requirements.

3,734,378

PNEUMATICALLY ACTUATED STAPLING PLIER

Joseph A. Rice, Swansea, Mass., and Edward I. Fisher, Westerly, R.I., assignors to Textron Inc., Providence, R.I.

Filed Sept. 2, 1971, Ser. No. 177,370
Int. Cl. B27f 7/08
U.S. Cl. 227—124 9 Claims



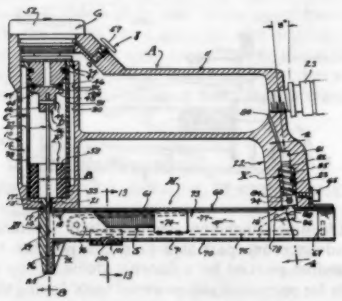
A pneumatically actuated stapling plier device including a generally L-shaped cylinder member actuated by a piston mounted in cylinder positioned in the rearward end of the tubular part of the housing structure defining the handle portion thereof, the arrangement of the clincher member and its driving piston rendering the device less bulky and easier to handle and eliminating external connecting rods heretofore provided which are subject to damage during use. The device includes a sequencing valve operable to sense predetermined pressure conditions established in the clincher cylinder by the operation of a manually actuated valve to sequentially operate a main valve controlling the communication of reservoir pressure with the drive cylinder thereby insuring a sequential cycle of operation of the clincher arm and staple driving element in which the workpiece is compressed prior to the driving and clinching of the staple therethrough.

3,734,379

AIR BIASED MAGAZINE LOCK AND GUIDEWAY CLOSURE FOR FASTENER DRIVING TOOLS

Richard E. Powers, San Marino, Calif., assignor to Powers Wire Products Co., Inc., El Monte, Calif.

Filed May 21, 1971, Ser. No. 145,755
Int. Cl. B27f 7/08
U.S. Cl. 227—127 14 Claims



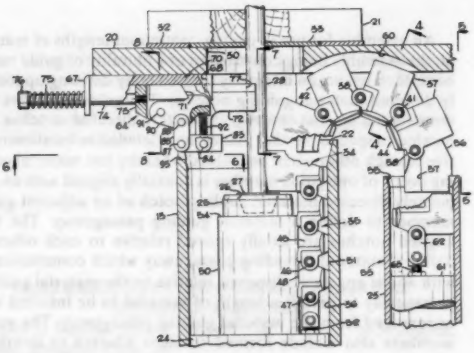
An air lock and positioning device for the magazine slide and guideway closure of a fastener driving tool, the advantageous features thereof being a substantial reduction in size accompanied by improved locking action and increased safety, whereby readjustment of the magazine slide and guideway closure is continuously affected during operation so as to assure tightness and consequent accurate guideway dimensions, and all of which is accomplished with few and easily formed parts.

3,734,380

MACHINE FOR DRIVING MINE ROOF PINS

Gerald W. Elders, 10 Hillcreast, Christopher, Ill.; Thomas E. Schneider, deceased, late of 601 E. Park St., DuQuoin, Ill. (Thomas R. Schneider, administrator), and John R. Alongi, 350 E. Main St., DuQuoin, Ill.

Continuation-in-part of Ser. No. 846,795, Aug. 1, 1969. This application Oct. 6, 1971, Ser. No. 186,848
Int. Cl. B25c 7/00
U.S. Cl. 227—140 18 Claims

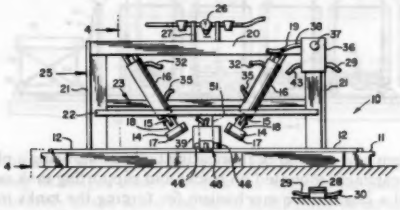


A machine for driving mine roof pins having a pin-centering support extending along a cylinder and supported by a piston so as to move with the piston when the piston drives the pin along the cylinder and into a mine roof, the pin-centering support engaging the pin to guide and support the pin after the pin is driven, and moving laterally out of the cylinder as it disengages from that portion of the pin about to enter the mine roof. The pin-centering support includes a plurality of support lengths engaging the side of the pin about the pin periphery, each support length having a plurality of interengaging, relatively movable support members. A secondary power mechanism is operatively connected to the support lengths for urging the support lengths back into the cylinder incident to retraction of the piston. Each support length engages the pin with substantially no relative movement therebetween and moves relative to the cylinder as the pin is driven by the piston means. In one embodiment, the support lengths are spaced substantially equidistantly about the pin periphery, and adjacent support members of each support length have substantially continuous and aligned pin-engaging surfaces to provide a substantially continuous, longitudinal support for the pin. Further, adjacent support members of the support lengths are pivotally interconnected to provide chains. A receiving assembly is provided to guide the support as it moves laterally from the cylinder. An auxiliary support selectively engages the side of the pin about the pin periphery in the region unsupported by the primary pin-centering support near the top of the cylinder and selectively disengages from the side of the pin and out of the path of the piston means to enable complete insertion of the pin by the piston.

3,734,381
APPARATUS FOR ADHERING AND INTERLOCKING MITERED MOLDING STRIPS TO A PANEL

Henry L. Blevio, 1 Diamond Road, Danbury, Conn.

Filed Mar. 10, 1971, Ser. No. 122,944
Int. Cl. B27f 7/02
U.S. Cl. 227—148 4 Claims

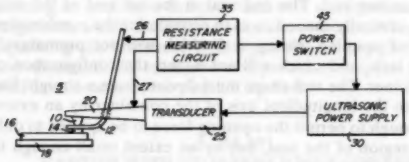


The machine operates upon a pair of mitered molding strips positioned on a flat base against guide rails at right angles to each other, to force their mating edges together and maintain them so while a clamp nail is driven into the juxtaposed strip ends to interlock the strips, thus forming an L-shaped member. A second L-shaped member is similarly formed of a second pair of mitered strips. To form a frame per se, each L-shaped member has one strip thereof positioned against one of the rails and the operation is repeated to interlock the juxtaposed ends of the two members. Finally, the two members which are interlocked at one end are withdrawn and reinserted after turning through an angle of 180 degrees, to interlock the opposite juxtaposed ends, thus completing the frame. To secure the two L-shaped members to a rectangular panel, they are fitted against the panel edges and with the panel between them the operations of interlocking the opposite ends of the members is repeated.

3,734,382
APPARATUS FOR CONTROL OF WELDING APPARATUS

Keith G. Spanjer, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 3, 1972, Ser. No. 240,442
Int. Cl. B23k 5/20
U.S. Cl. 228—1 2 Claims

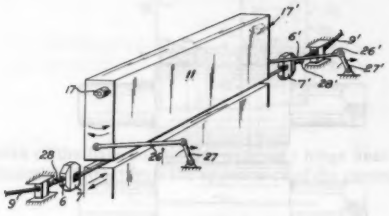


A system for improving the quality of a bond obtained from an ultrasonic welding apparatus includes a resistance measuring circuit for monitoring the electrical resistance between the wire to be bonded and the bonding head. The welding apparatus is automatically de-activated upon an increase in said resistance, the increase being indicative of bond formation. De-activating the bonding apparatus immediately following bond formation prevents the application of further ultrasonic energy from weakening the bond.

3,734,383
APPARATUS FOR MANUFACTURING WELDED WIRE MESH BY FRICTION WELDING

Klaus Ritter; Josef Ritter; Gerhard Ritter, and Gott Hans, all of Graz, Austria, assignors to Firma EVG Entwicklungs-U. Verwertungsgesellschaft m.b.H., Graz, Austria

Filed Apr. 5, 1971, Ser. No. 130,973
Claims priority, application Austria, Apr. 7, 1970, A 3181/70
Int. Cl. B23k 27/00
U.S. Cl. 228—2 11 Claims

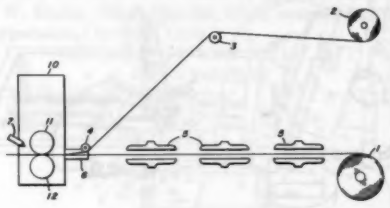


In a process for manufacturing welded wire mesh by friction welding the longitudinal wires of said mesh are held stationary at predetermined distances apart and a transverse wire is subjected to tension and caused to oscillate at high frequency and small amplitude in the direction of its own length and is thrust against said longitudinal wires during said oscillation at the crossing points to produce frictional heat in the crossed wires, said oscillation is interrupted upon attainment of welding temperature whereby said crossed wires are welded together, and said thrust is relaxed after cooling and hardening of said welds and the mesh is advanced a step corresponding to the predetermined transverse wire spacing.

3,734,384
APPARATUS FOR ROLL PRESSURE BONDING

Larry M. Kozak, Tarentum, and Raymond L. Southern, Lower Burrell, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 824,205, May 13, 1969, Pat. No. 3,632,034. This application June 11, 1971, Ser. No. 152,318
Int. Cl. B23k 1/00
U.S. Cl. 228—4 10 Claims



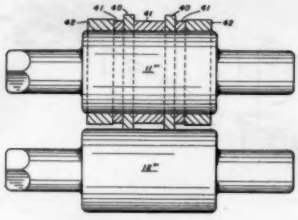
The application describes a method and apparatus for roll pressure bonding a plurality of stripes to a substrate. Through unique roll arrangements and designs, stripes of controllable thickness are produced, as conditions which cause non-uniform roll pressures are eliminated. Furthermore, these unique roll arrangements and designs protect the substrate in the areas between the stripes from surface damage such as roll scratching. Additionally, novel means are provided which both guide and heat the materials.

3,734,385

APPARATUS FOR SIMULTANEOUSLY BONDING A PLURALITY OF WIDTHS OF STRIPING MATERIAL TO A SUBSTRATE

Larry M. Kozak, Tarentum, and Raymond L. Southern, Lower Burrell, both pf, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 824,205, May 13, 1969, Pat. No. 3,632,043. This application June 11, 1971, Ser. No. 152,317
Int. Cl. B23k 1/00
U.S. Cl. 228—4 10 Claims



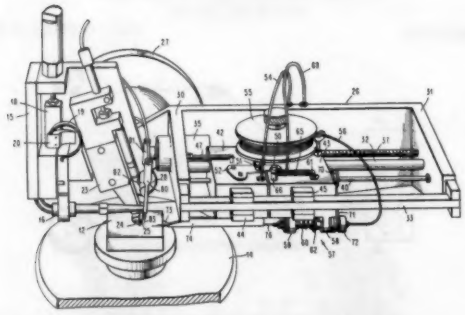
The application describes a method and apparatus for roll pressure bonding a plurality of stripes to a substrate. Through unique roll arrangements and designs, stripes of controllable thickness are produced, as conditions which cause non-uniform roll pressures are eliminated. Furthermore, these unique roll arrangements and designs protect the substrate in the areas between the stripes from surface damage such as roll scratching. Additionally, novel means are provided which both guide and heat the materials.

3,734,386

WIRING APPARATUS WITH WIRE PATH FORMING MEANS

Herbert K. Hazel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,344
Int. Cl. B23k 1/20
U.S. Cl. 228—5 6 Claims



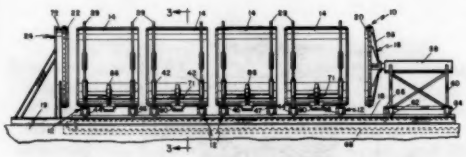
Improved apparatus for bonding a wire between two conductive pads on a circuit module is disclosed. Means is provided for bending the wire to conform to a predetermined path from the first bonding site to the second. The bends are unsupported and the wire feed is arranged to supply additional wire to the module without disturbing a previously formed bend.

3,734,387

TANK FABRICATION SYSTEM

Alfred L. Sannipoli, Escondido, Calif., assignor to Lyco Manufacturing, Inc., Escondido, Calif.

Filed May 18, 1971, Ser. No. 144,532
Int. Cl. B23k 5/00
U.S. Cl. 228—6 1 Claim



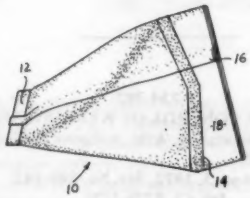
A system and method of fabricating tanks comprising a plurality of carriages mounted on tracks and supporting tank sections and a chain drive mechanism for forcing the tanks into contacting relationship. Also included is a hydraulic ram for applying further contacting pressure so that intimate contact is established between adjacent sections. If the sections are supplied with the flanges, flanges are forced within the flange receiving portions of adjacent sections. The carriages contain provision forcing the tank section to assume a more perfectly circular, cross-section and for rotating the entire assembly after it is structurally joined by a series of tack welds. The final seam weld is made with an automatic welder over the entire circumference of the joint between each adjacent section as the tank is rotated.

3,734,388

OPENING MEANS FOR TETRAHEDRAL CONTAINER

Arthur W. Hopkins, Stonebridge Road, Cornwall, N.Y.

Filed Mar. 8, 1972, Ser. No. 232,751
Int. Cl. B65d 83/00, 17/00
U.S. Cl. 229—7 16 Claims



A tetrahedral shaped container is provided with a pair of tabs at one end. By pulling apart the tabs, an opening is formed at one end. The end seal at the tab end of the container is critically shaped so as to provide for the combination of ease of opening, strong seal which will not prematurely open or leak, and which will not distort the configuration of the container. The seal shape must deviate from a straight line normal to the longitudinal axis of the container by an extent great enough to permit the opening force to be applied to only a small region of the seal, but by an extent small enough to minimize distorts in the container.

3,734,389

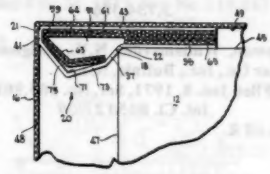
PACKAGE CORNER POST

Philip H. Brown, Zionsville, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Apr. 15, 1971, Ser. No. 134,375
Int. Cl. B65d 25/16
U.S. Cl. 229—14 C 11 Claims

In a container for a bulky and heavy article generally cubic in shape, a vertical corner post for cushioning and protecting a

vertical edge of the article. The corner post has a cross-section in the shape of the numeral 4 and is positioned such that a recess engages an adjacent outer edge of the article and a vertex of the post extends into an adjacent inner corner of the



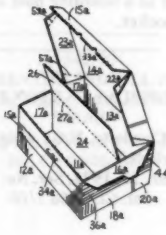
container. An hypotenuse panel of the post has a score line along its length which permits the hypotenuse panel to fold outwardly at the score line upon application of an extreme or repeated lateral compressive force to cushion the article against the force.

3,734,390

FRONT-OPENING CARTON WITH UNIQUE END FLAP ARRANGEMENT

Kenneth T. Buttery, Kalamazoo, and Richard G. Haas, Parchment, both of Mich., assignors to Brown Company, Kalamazoo, Mich.

Filed May 3, 1971, Ser. No. 139,657
Int. Cl. B65d *5/48, 5/54*
U.S. Cl. 229—27 **30 Claims**



A front-opening, rectangular paperboard carton including top, bottom, front wall, rear wall and end walls, together defining an enclosure and provided with a unique end flap arrangement which facilitates reclosure. An upstanding divider separating the enclosure into a plurality of compartments is also disclosed. At least one compartment may be provided with a removable cover panel, if desired.

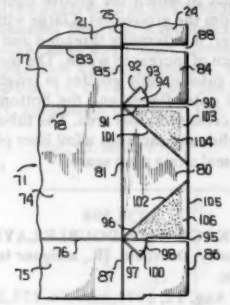
3,734,391

CARTON WITH SHORTENED WEB CORNERS

Guelfo A. Manizza, Blauvelt, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,260
Int. Cl. B65d *5/22, 5/24*
U.S. Cl. 229—31 R **16 Claims**

This disclosure relates to a collapsible carton having a leakproof corner wherein the web or gusset defining the corner is foreshortened whereby the necessary seal adjacent the base of the carton is provided and at the same time the flap may be securely secured in place in conventional manners. Furthermore, where desired, the carton may be constructed so that the walls may be folded into superimposed relation with respect to the base and wherein hinging of the carton is in the



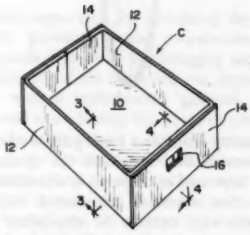
area of the flaps so that the necessary hinge lines do not undesirably detract from the appearance of the carton.

3,734,392

MULTI-WALL CONTAINER

Frank E. Clark, Orinda, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed June 3, 1971, Ser. No. 149,605
Int. Cl. B65d *5/22*
U.S. Cl. 229—34 **1 Claim**



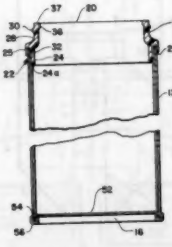
A container formed of paperboard and having a single-ply bottom wall, double-ply side walls, and triple-ply end walls with hand holes which may also serve to provide interlocking engagement with a container cover.

3,734,393

WIDE MOUTH TUBULAR CONTAINER CONSTRUCTION

Paul W. Stump, North Olmsted, Ohio, assignor to Clevepak Corporation, Cleveland, Ohio

Filed July 29, 1971, Ser. No. 167,417
Int. Cl. B65d *5/64*
U.S. Cl. 229—43 **1 Claim**



A wide mouth, screw top, end member for a tubular container, and a fiber board tubular container incorporating said

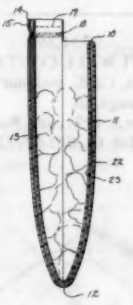
end member, a jar lid, and a bottom closure. The end member includes a peripheral groove formed by concentric flanges, and a mouth-forming flange that extends in the opposite direction from that in which the groove opens and which is offset inwardly from the groove yet is large with respect to the container diameter, is externally threaded and terminates in a flat annular surface of increased width. The inner flange forming the groove is substantially greater in length axially of the member than the outer flange and the bottom of the groove has a diminished cross sectional area. The tubular container is formed of body plies and includes a foil liner ply that provides a metal-to-metal seal along a lap seam.

3,734,394

FLEXIBLE PACKAGE WITH DOUBLE LAYERED WALLS

David Francis Dooley, Deerfield, Ill., assignor to Milprint, Inc., Milwaukee, Wis.

Filed Aug. 12, 1971, Ser. No. 171,225
Int. Cl. B65d *31/00*
U.S. Cl. 229—55 **1 Claim**



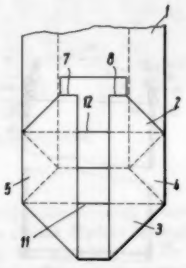
A package having front and back panels each formed of a double layer construction in which the space between the inner and outer layers of each panel is circumscribed by marginal seams so that material introduced into the package through an open end cannot be deposited in the space between the inner and outer layer of each panel.

3,734,395

BAG

Amir Erk, Grossdornberg; Ottomar Tessmann, and Klaus Schirrich, both of Bielefeld, all of Germany, assignors to Fischer & Kreck KG, Bielefeld, Germany

Filed May 26, 1971, Ser. No. 145,085
Claims priority, application Germany, May 29, 1970, P 20 26 330.3
Int. Cl. B65d *33/00*
U.S. Cl. 229—58 **10 Claims**



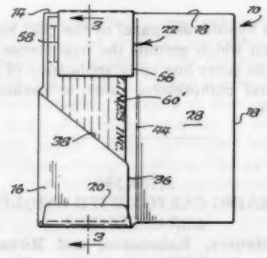
A bag has side walls and a flat bottom having lateral folds and corner folds. An insert of thermally insulating material is located in the flat bottom extending underneath the corner folds and having folded lateral portions which extend beyond the lateral folds but not beneath the corner folds. The folded portions of the bottom are bonded, adhesively or by heat-bonding if the bottom is of requisite heat-bondable material.

3,734,396

TICKET ENVELOPE

Harold L. Cowan, Williamsville, N.Y., assignor to Franklin-Cowan Paper Co., Inc., Buffalo, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,901
Int. Cl. B65d *27/00*
U.S. Cl. 229—68 R **5 Claims**



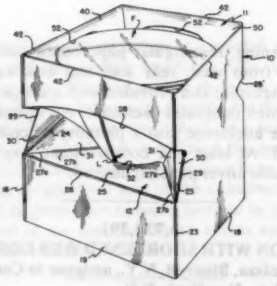
In a ticket envelope having a front panel, a rear panel folded over the front panel and a bottom flap secured to the rear panel to form a ticket-receiving pocket, an upper flap is detachably secured to the front panel along a perforated line and is foldable in overlying relation to the front panel. The upper flap functions as a boarding pass and assures retention of the ticket in the pocket.

3,734,397

SUPPORT AND DISPLAY CARTON FOR PARABOLIC LAMP

Raymond A. Cote, Charlotte, N.C., assignor to Rexham Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,084
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 B **4 Claims**

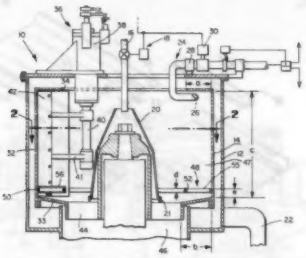


An open-ended carton sleeve for packaging a parabolic lamp bulb is disclosed herein. The sleeve includes a pair of yoke-like platforms suspended centrally therein from hinged gusset flaps extending inwardly from opposite side walls and a mitered frame-like structure of folded shadow panels at the upper edges of the sleeve. The bulb is supported, cushioned, and displayed in the sleeve by the frame and the platform structures.

3,734,398
BASKET CENTRIFUGE WITH MATERIAL REMOVING MEANS

Frederick Walker Keith, Jr., Gladwyne, and Robert Edward Krause, Philadelphia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 26, 1971, Ser. No. 119,247
Int. Cl. B04b *1/00*
U.S. Cl. 233—3 11 Claims

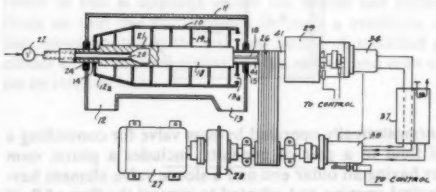


A basket centrifuge is provided with an improved arrangement of radially extending accelerator vanes to improve flow orientation, reduce turbulance, and in general improve the effectiveness of the centrifuge apparatus when concentrating sludge. The improved arrangement of accelerator vanes is located in an end portion of the centrifuge bowl, and extends outwardly from a point located between the feed outlet means and the overflow lip. The basket centrifuge may also be provided with a knife blade for removing solids which have accumulated against the inner peripheral wall of the centrifuge bowl, the knife blade cooperating with the accelerator vanes so that it can be moved outwardly to contact the peripheral wall.

3,734,399
DIFFERENTIAL SCROLL DRIVE

David C. Oas, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed May 28, 1971, Ser. No. 147,796
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 9 Claims

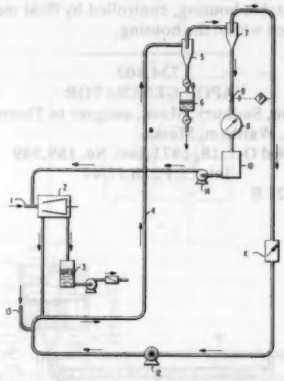


A driven centrifuge mechanism for separating intermixed liquids and solids including a hollow bowl supported for rotation about an axis with a smaller inner diameter at one end and a larger at the other end and a helical conveyor scroll extending through the center for moving solids to a solids opening at one end of the bowl and a liquid opening at the other end of the bowl and a drive at one end of the bowl connected to the bowl and to the scroll for driving the bowl off a main drive motor at a constant speed and for varying the speed of the scroll relative thereto with the main drive motor driving a hydraulic pump which drives a hydraulic motor and through a differential gear means drives the scroll with the speed between the hydraulic pump and motor variable so as to be able to control the speed of the scroll.

3,734,400
PROCESS FOR THE PREPARATION OF DRY THERMOPLASTIC SYNTHETIC RESIN POWDERS FROM LIQUEFIED GAS SUSPENSIONS

Kurt Pfeiffer; Johannes Dietrich; Karl-Heinz Schonberg, and Gunter Beckmann, all of 4370 Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 15, 1971, Ser. No. 208,065
Claims priority, application Germany, Dec. 17, 1970, P 20 62 192.5
Int. Cl. B04b *15/02*
U.S. Cl. 233—11 15 Claims

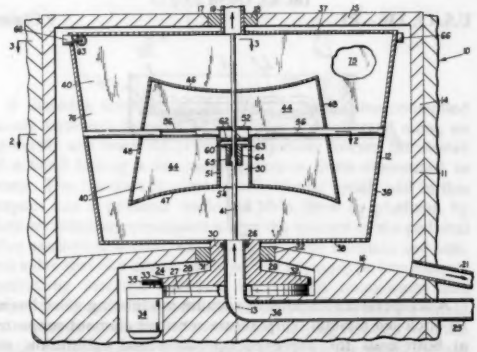


A process and apparatus for obtaining dry thermoplastic synthetic resin powders from suspensions of powdery polymers in liquefied gases by centrifuging such a suspension to remove a majority of the liquefied gas, drying the resultant moist powder with a superheated gaseous current of the liquefied gas, and introducing the gaseous entrained powder into a first cyclone to obtain a dry thermoplastic synthetic resin powder as the bottoms product. The top of the first cyclone is connected to a second cyclone which separates the incoming mixture into a light phase and a heavy phase. The light phase is heated and then recycled as the super-heated gaseous current of liquefied gas to dry the previously noted moist powder. The heavy phase is condensed and recycled back to the incoming suspension to form a closed system. The amount of heavy phase is dependent upon the superatmospheric pressure of the system as regulated by a valve adjacently connected to the bottom of the second cyclone.

3,734,401
CENTRIFUGAL SEPARATOR

David Frewen, 2766 Alder, Eugene, Oreg.

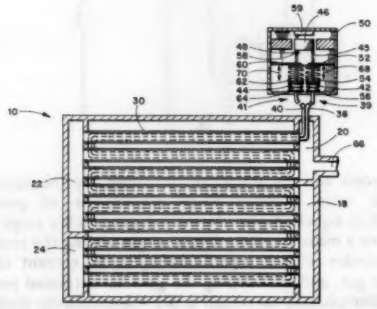
Filed July 29, 1970, Ser. No. 59,088
Int. Cl. B04b *11/00*
U.S. Cl. 233—20 R 8 Claims



A centrifugal separator including a rotatable housing having plural, separate fluid channels therein defined between a plu-

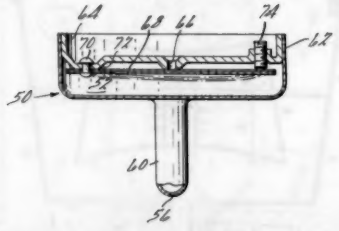
rality of vanes secured longitudinally within the housing. The housing has an inlet pipe at one end for admitting fluid material to be processed, and an outlet pipe at the other end for evacuating the processed material. The cross-sectional areas of the fluid channels are designed to be progressively larger toward the outlet end of the separator to facilitate separation of the material being processed. Numerous valve-controlled discharge openings are provided in the housing near the outlet end for exhausting the separated material. The discharge valves are sensitive to the specific gravity of the separated material so that they exhaust only material having a specific gravity above a predetermined level. An air vent is provided within the rotatable housing, controlled by float means, to exhaust air trapped within the housing.

3,734,402
VAPOR GENERATOR
Dean T. Morgan, Sudbury, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Oct. 18, 1971, Ser. No. 189,949
Int. Cl. F22b *37/47*
U.S. Cl. 236—21 B **11 Claims**



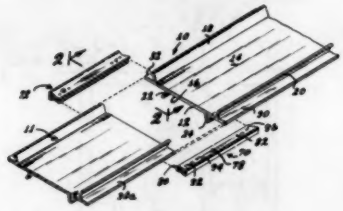
A vapor generator for a Rankine cycle engine includes an elongated heat exchange tube for conducting engine working fluid therethrough. A temperature-responsive mechanism extends along the heat exchange tube for sensing the average temperature along its length and also the temperature at any segment of its length. The temperature-responsive mechanism produces a signal from which operation of the vapor generator heat source is influenced as function of either one or both of these temperature conditions.

3,734,403
THERMOSTATIC VACUUM VALVE
Robert W. Eshelman, 341 Riverview, Ann Arbor, Mich., and Wayst Ohar, 1909 Ivywood Drive, Ann Arbor, Mich.
Filed Sept. 17, 1971, Ser. No. 181,498
Int. Cl. G05d *23/275*
U.S. Cl. 236—87 **9 Claims**



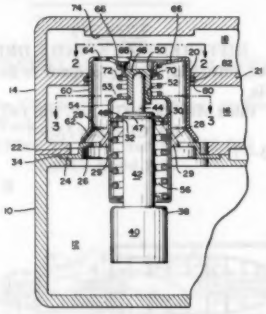
A temperature responsive vacuum modulating valve having an enclosed bimetal temperature sensitive element supported at both ends for improved operation and calibration, the overall valve design exhibiting improved thermal responsivity.

3,734,404
TRACK SYSTEM FOR TOY VEHICLE
William R. Baynes, Palos Verdes Peninsula, and Elliot Handler, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 27, 1970, Ser. No. 92,999
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **13 Claims**



A track system including a reversible track section having two different running surfaces to handle different scale toy vehicles and a track section connector for connecting abutting track sections along projections protruding from guide flanges of the track sections.

3,734,405
THERMOSTATICALLY OPERATED BY-PASS VALVE
Joseph P. Wagner, 136 Surburban Road, Knoxville, Tenn.
Filed June 1, 1971, Ser. No. 148,675
Int. Cl. F01p *7/02*
U.S. Cl. 236—34.5 **5 Claims**



A thermostatically operated by-pass valve for controlling a flow of fluid to a pair of conduits, includes a piston stem member having an outer end and a sleeve valve element having a central opening and adapted to control the flow of fluid to the conduits and an elongated cup-shaped element slidably disposed within the central opening of the sleeve valve element and adapted to engage interiorly a substantial portion of the outer end of the piston stem member, wherein the ratios of the diameters of the piston stem member and the cup-shaped member to the diameter of the sleeve valve element are relatively large, to thereby minimize rocking of the sleeve valve element in order to reduce wear of the sleeve valve element and its seal.

ERRATUM

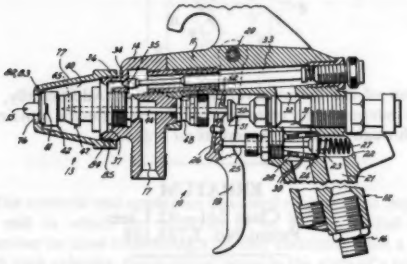
For Class 238—10 E see:
Patent No. 3,734,404

3,734,406

METHOD AND APPARATUS FOR PRODUCING A FLAT FAN PAINT SPRAY PATTERN

Peter W. Runstadler, Jr., Hanover, N.H.; Eric T. Nord, Oberlin; Donald R. Hastings, Elyria; Samuel R. Rosen, Lorain; Don R. Scarbrough, Elyria, and Frederick R. Wilhelm, Avon Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed July 30, 1971, Ser. No. 167,695
Int. Cl. A01n 17/02; B05b 7/04
U.S. Cl. 239—8 30 Claims



A method and apparatus for spraying a coating material such as paint, in a flat fan pattern. In the gun a stream of paint under a relatively low pressure is caused to flow in an annular film. Streams of gas at a slightly higher pressure are directed against the paint film so that the gas is sheared into microbubbles which are entrained in the paint stream to form a froth. The froth flows through a chamber in which the bubbles disperse uniformly in the paint and is then discharged through a narrow slit nozzle effective to give it a fan shape. As the froth is released to atmospheric pressure, the microbubbles of air expand rapidly and rupture, causing the paint to disintegrate into finely atomized drops. The apparatus includes a cooperating orifice plate and collar which define a thin annular paint flow channel; and a plurality of air injection channels which intersect the paint flow channel. Air is introduced through these channels and is directed against the paint film. In the preferred gun, the nozzle includes a hemispherical endwise portion provided with an elongated discharge slot. A protuberance or ball is disposed within the nozzle and deflects the froth so that the froth passes through a relatively narrow passageway between the ball and nozzle. A modified gun includes a conventional airless flat fan orifice; and does not utilize an internal ball.

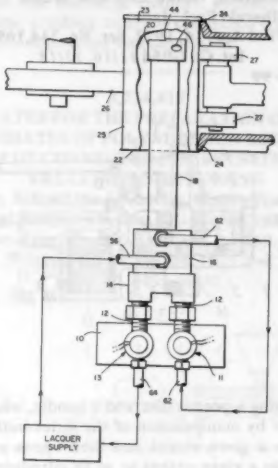
3,734,407

DUAL SPRAY AND RECIRCULATION SYSTEM

Albert F. De Stefano, Jr., Philadelphia, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed July 30, 1971, Ser. No. 167,699
Int. Cl. B05b 1/24, 9/00
U.S. Cl. 239—13 14 Claims

An electrically operated solenoid actuated spray system for coating the insides of cans with lacquer or other coating substance. A nozzle extension adapted to extend into cans includes concentric chambers allowing hot lacquer to constantly recirculate by flowing through the nozzle extension to the nozzle tip and back again. Separate tubes are provided within the inner concentric chamber to transport the lacquer to dual nozzle spray outlets. Even though lacquer may remain in these tubes for periods of time when there are breaks in can production, the recirculating lacquer will keep the lacquer in the tubes hot and ready to be used thus preventing improper application when can coating resumes.

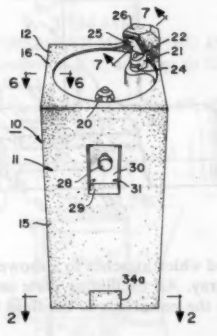


3,734,408

VANDAL-PROOF DRINKING FOUNTAIN

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.

Filed May 21, 1971, Ser. No. 145,757
Int. Cl. E03b 9/20; A47k 1/04
U.S. Cl. 239—29 12 Claims



A drinking fountain of the type having a valve-controlled nozzle structure through which water is discharged along an upwardly and inwardly oriented trajectory toward the center of a bowl having a discharge outlet or drain connected to waste. The fountain is substantially vandal proof, and in this respect has a pedestal anchored to a floor or platform by fastener structure concealed within the interior of the pedestal after anchorage is effected. The bowl of the fountain and control valve therefor are recessed so that prying-type implements cannot be inserted between either such component and respectively underlying surfaces of the pedestal, and the shield that extends upwardly in somewhat overlying relation with the nozzle outlet is covered by a guard that seats the shield therein so as to protect the same from impact blows.

3,734,409

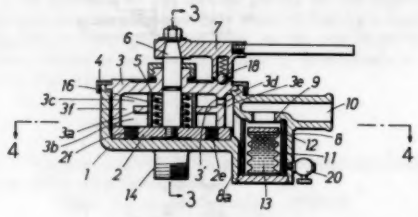
STEAM/WATER MIXING VALVE

Masao Okada, Nishinariku, Osaka, Japan, assignor to Masao Okada, Nisinariku, Osaka City and Masao Nozawa, Ryugazaki-shi, Ibaraki Pref., Japan

Filed Apr. 14, 1972, Ser. No. 244,109

Int. Cl. G05d *11/16, 23/13*

U.S. Cl. 239—99 **2 Claims**



A valve having a porous disc and a handle, where the rotation of former by manipulation of the latter initially opens a water inlet to a given extent and then opens a steam inlet gradually up to a given extent so as to introduce cold water and steam into a mixing chamber at given rates, respectively, delivering hot water of desired temperature instantly and continuously through a tap.

3,734,410

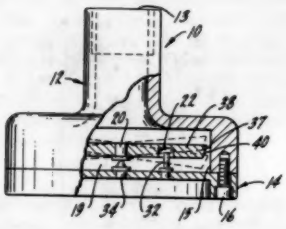
PULSATING SPRAY HEAD

Leonard Bruno, Farmingdale, N.Y., assignor to Stanadyne, Inc., Windsor, Conn.

Continuation-in-part of Ser. Nos. 15,719, March 2, 1970, abandoned, and Ser. No. 125,093, March 17, 1971, abandoned. This application Sept. 30, 1971, Ser. No. 185,271

Int. Cl. B05b *1/34*

U.S. Cl. 239—102 **13 Claims**



A spray head which attaches to a shower or hose to provide a pulsating spray. An oscillating plate installed in the spray head provides the pulsations in the fluid flowing through the spray head.

3,734,411

AIR BRAKE FOR JETS

Konrad Wolf, and Hermann Barmbold, both of Bremen, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

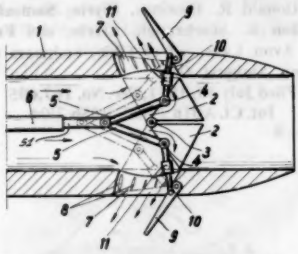
Filed May 21, 1971, Ser. No. 145,780

Claims priority, application Germany, June 6, 1970, P 20 27 882.4

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.29 **4 Claims**

Brake system for aircraft in cooperation with a thrust producing jet engine exhaust nozzle, using at least one thrust reversing deflector having selective position in the flow path of the nozzle for thrust reversal and for flow-through without thrust reversal, a flap is disposed and connected to the deflector to serve as jet flow guide vane, when extended, for the reversed stream of gases as resulting from thrust reversing



position of the thrust reversing deflector. Additionally, the flap is independently extendible while the deflector remains in flow through position, to serve as air brake.

ERRATUM

For Class 241—82.1 see:
Patent No. 3,734,148

3,734,412

METHOD AND ARRANGEMENT FOR PERFORMING LOW-TEMPERATURE GRINDING OPERATIONS IN A VIBRATING MILL

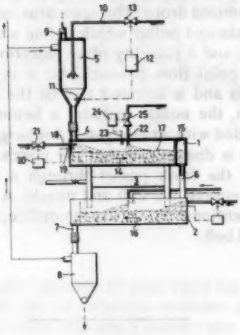
Helmut Haas, Cologne, and Helmut Siedler, Essen, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln and Air Products GmbH, Dusseldorf, Germany

Filed Dec. 14, 1971, Ser. No. 207,912

Claims priority, application Germany, Dec. 16, 1970, P 20 61 837.5

Int. Cl. B02c *17/06, 23/00, 25/00*

U.S. Cl. 241—15 **6 Claims**

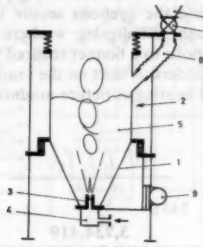


Low-temperature grinding operations are performed in the horizontal and longitudinal tubular grinding chambers of a vibrating mill by introducing the material to be ground at one end of the grinding chambers introducing at least at one point of the grinding chambers adjustable amounts of a refrigerant—for example liquid nitrogen—above the surface of the material to be ground in the grinding chambers, and arranging a thermometer probe at each point of introduction at a point spaced ahead of the points of refrigerant introduction when considering the direction of travel of the material to be ground lengthwise in said grinding chamber, said thermometer probe being used for adjusting the amount of refrigerant introduced into said grinding chamber to maintain the temperature in the latter at a predetermined level.

3,734,413
FLUIDIZED BED JET MILL

Fritz W. Kaiser, Hammel Near Augsburg, Germany, assignor to Alpine Aktiengesellschaft, Augsburg, Germany

Filed Apr. 21, 1971, Ser. No. 135,919
Claims priority, application Germany, Aug. 14, 1970, P 20 40 519.0
Int. Cl. B02c *19/06*
U.S. Cl. 241—39 10 Claims

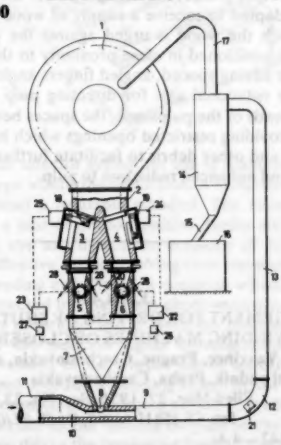


The method and apparatus disclosed relates to an improved jet mill in which the material to be ground is fed into a chamber or zone containing a jet that emanates from a nozzle with high velocity, the material being in the state of a compact bed and the outlet of the nozzle being located beneath the surface of the bed. The bed is preferably a "moved compact bed" arranged so that the material to be ground is fed sideways into the jet. A sifter or classifier for the coarse and fine material produced in the grinding operation is arranged above the bed of material in the grinding chamber or zone. The compact bed of material may be moved in a variety of ways, and the volume occupied by it is filled up to the greater part with compact granular material. This could be defined as the ratio of wholly occupied volume to the volume of the compact matter, or by the term "compact current" as commonly employed in the pneumatic transportation art.

3,734,414
DEVICE FOR CRUSHING HOT FURNACE DISCHARGE MATERIAL, PARTICULARLY HOT ALUMINA

Horst Weigel; Otto Wilbertz; Theo Manshausen, and Alfred Kryczun, all of Cologne, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Sept. 7, 1971, Ser. No. 178,269
Claims priority, application Germany, Sept. 18, 1970, P 20 46 136.3
Int. Cl. B02c *25/00*
U.S. Cl. 241—40 12 Claims

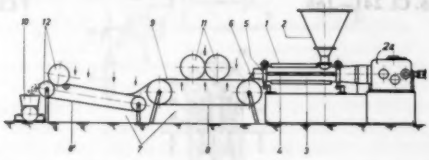


A device for crushing hot alumina is arranged between the discharge aperture of a calcining furnace and the charging aperture of a cooler and comprises a primary crushing roller arranged in a vertical discharge channel between the ends thereof and a pneumatic crushing means connected to the lower end of said discharge channel, whereby the outlet of said pneumatic crushing means is connected with a separator which in turn is connected with said cooler.

3,734,415
APPARATUS FOR THE PREPARATION OF SOLID INTERMEDIATES OF POLYADDITION RESINS IN THE FORM OF CONNECTED PIECES USEFUL FOR BREAKING AND GRINDING

Peter Franz, Mumpf, and Andreas Maier, Pratteln, both of Switzerland, assignors to Buss A.G., Basel, Switzerland

Division of Ser. No. 856,336, Sept. 9, 1969, Pat. No. 3,643,874. This application Nov. 24, 1971, Ser. No. 202,027
Int. Cl. B02c *19/00*
U.S. Cl. 241—65 1 Claim

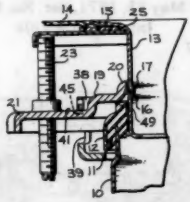


Apparatus for the preparation of polyaddition resins, including means for proportioning and feeding base compositions in a mixing and kneading machine, mixing them with simultaneous heating or cooling, in a solid and/or liquid state, plasticizing and homogenizing the compositions, expelling resin mix through a heated die onto a cooling belt, solidifying and preforming the resin mix into loosely connected small pieces, and breaking up as well as grinding the preformed pieces of the resin mix. Optionally crushing may be performed before the breaking and grinding step.

3,734,416
WASTE FOOD DISPOSER MOUNTING ASSEMBLY

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 26, 1970, Ser. No. 67,107
Int. Cl. B02c *18/42*
U.S. Cl. 241—100.5 7 Claims



A sink mount support assembly for a waste food disposer includes a pair of annular members having means thereon to enable engagement of the members, one with the other, when the members are brought together in axial alignment and one of the members is rotated with respect to the other. The means of engaging one of the members to the other provides a first holding position whereby the disposer is suspended beneath the sink but may be axially rotated to complete the plumbing connection thereto. A second locked position is provided whereby the disposer is fastened firmly to the sink drain sleeve

and prevented from thereafter rotating relative thereto. The means of engaging the two annular members of the sink mount support assembly is a quick connect arrangement requiring only that the rotatable annular member be manually driven in rotation a relatively short distance to complete the procedure of mounting a disposer to a sink drain sleeve, and it is a quick disconnect assembly inasmuch as the rotatable member may be thereafter manually driven to rotate in a direction opposite to the connecting rotation to free the disposer unit from the drain sleeve.

3,734,417

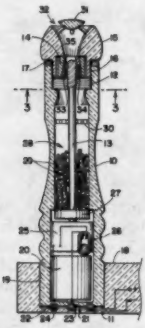
ELECTRIC PEPPER MILL

John Duncan Russell, Malibu, and Neil E. Carter, Santa Ynez, both of Calif., assignors to John Duncan Russell and Neil E. Carter, Los Angeles, Calif., part interest to each

Filed July 20, 1971, Ser. No. 164,339

Int. Cl. A47j *42/06*

U.S. Cl. 241—168 **7 Claims**



An electric cordless pepper mill is provided in the form of an elongated body having a base incorporating batteries, a motor, and a gear reduction means for operating a rotor grinder disposed in the top portion of the body. A tilt switch is incorporated so that the motor is only operated when the body is tilted to position the top lower than the base, the ground pepper passing from the top of the body.

3,734,418

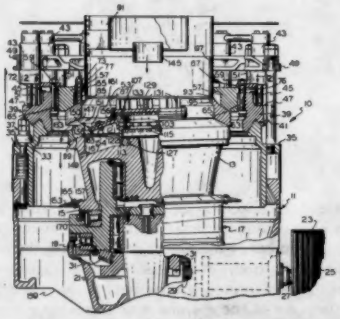
SANDCONE CRUSHER

Louis W. Johnson, 3440 Franklin Boulevard, Eugene, Oreg.

Filed May 13, 1971, Ser. No. 143,142

Int. Cl. B02c *2/04*

U.S. Cl. 241—207 **15 Claims**



A crusher has a crusher head that is gyrated relative to a crusher bowl. The crusher head supports an annular mantle held by a mantle washer and a clamping plate clamped to a self-tightening nut by a clamping plate bolted to the nut. The washer covers a drained chamber in the crusher head and has drain holes for water from an annular recess formed by the inner edge of the mantle and the washer. A distributor plate having pickets covers the clamping plate and is positioned below a center distributing hopper in a larger hopper having a lining outwardly set back from an inwardly extending protective flange of a bowl liner. Self-locking pins lock eyebolts to the bowl liner and the eyebolts secure the bowl liner to a clamp bar through self-aligning washers. The clamp bar is bolted by fluted bolts to a bonnet secured to a bonnet support by holddown cylinders. A skirt on the crusher head overhangs a cam and thrust bearing structure mounting the cam and the crusher head.

3,734,419

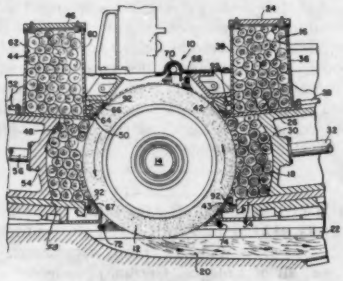
FINGER BARS FOR PULPWOOD GRINDERS

George W. Cryderman, Thunder Bay, Ontario, Canada, assignor to Koehring-Waterous, Ltd., Brantford, Ontario, Canada

Filed May 24, 1971, Ser. No. 146,351

Int. Cl. B02c *7/00*

U.S. Cl. 241—282 **7 Claims**



A pulpwood grinder including a power driven pulpstone, a pocket adapted to receive a supply of wood to be processed from which the wood is urged against the pulpstone and a finger bar positioned in close proximity to the pulpstone, the finger bar having spaced, angled fingers angled relative to the pulpstone rotational axis for directing pulp laterally toward the axial ends of the pulpstone, the spaces between the angled fingers providing restricted openings which hinder movement of slivers and other debris to facilitate further grinding action thereon and enhanced reduction to pulp.

3,734,420

ARRANGEMENT FOR DRIVING OF SHUTTLELESS COIL WINDING MACHINES OF CLOSED CORES

Bohuslav Vavrinec, Prague, Czechoslovakia, assignor to Tesla, Narodni podnik, Praha, Czechoslovakia

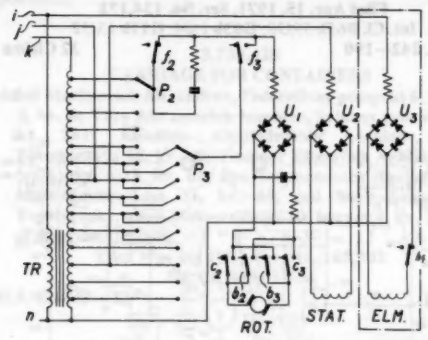
Filed Mar. 27, 1970, Ser. No. 23,407

Int. Cl. H01f *41/08;* **B65h** *81/02*

U.S. Cl. 242—4 A **6 Claims**

Shuttleless coil winding machines for winding of coils on closed cores particularly of miniature cores, require a quick speed reduction in the course of tightening a newly wound-on

turn in order to prevent breaking of the conductor. Means controlled by a cam, driven in synchronism with the winding



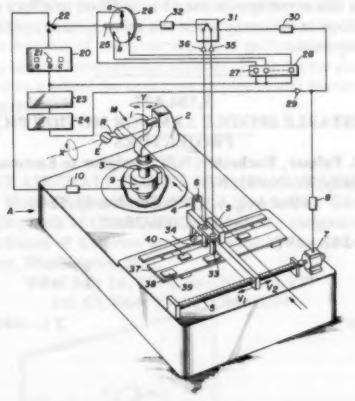
means are provided, which cause a speed reduction of the electric driving motor by counter-current at preselected reduced supply voltage.

3,734,421

MULTIPLE RATIO SELECTOR SYSTEM

Harald Karlson, Santa Monica; William B. Goldsworthy, Palos Verdes, and Tim T. Hegyi, Hawthorne, all of Calif., assignors to Goldsworthy Engineering, Inc., Torrance, Calif.

Filed Apr. 12, 1971, Ser. No. 133,061
Int. Cl. B65h *81/08*
U.S. Cl. 242—7.21 **9 Claims**



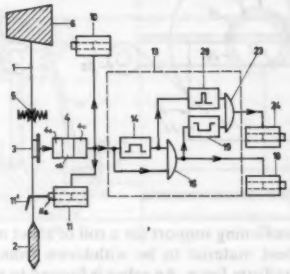
A multiple ratio selector system for use in filament winding systems of the type where filaments from a traversing feeding eye is wound about a rotatable mandrel. The ratio selector system includes a pair of photo sensitive diodes which move with the feeding eye and detect the presence of positionally located photo reflective surfaces during their traversing movement with the feeding eye. On each occasion where a reflective surface is detected by one of the photo sensitive diodes, a position signal is generated and a direction mechanism permits passage of the position signal corresponding to the direction of movement of the proper photo sensitive diode. This position signal operates a stepping switch driver which, in turn, causes the rotation of a stepping switch. A multiple ratio selector is connected to the various outputs of the stepping switch and in turn drives the traversing feeding eye through a servo valve.

3,734,422

APPARATUS FOR MONITORING YARN AT WINDERS

Erich Loepfe, 8625 Zollikerberg, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Wetzikon, Switzerland

Filed May 17, 1971, Ser. No. 143,777
Claims priority, application Switzerland, May 28, 1970, 8011/70
Int. Cl. B65h *63/00*
U.S. Cl. 242—36 **11 Claims**



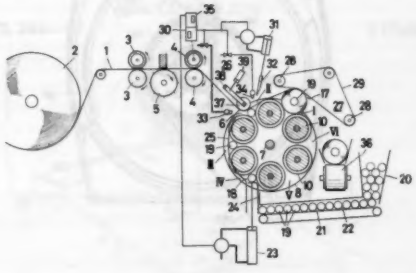
An apparatus for monitoring a yarn at a winder which comprises a tribo electrical transducer for determining the presence of a stationary yarn, an interrogation mechanism operably associated with the yarn, and means for actuating the interrogation mechanism when the speed of travel of the yarn has fallen below a predetermined boundary value so that the interrogation mechanism can generate a relative movement between the transducer and the yarn which is sufficient to produce a response signal by the transducer.

3,734,423

METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING SMALL DISPENSING ROLLS OF SHEET

Hiroshi Kataoka, 5-8, Asahi 1 chome, Iyomishima, Japan

Continuation-in-part of Ser. No. 757,229, Sept. 4, 1968, abandoned. This application Sept. 2, 1970, Ser. No. 68,873
Claims priority, application Japan, Sept. 4, 1968, 43/757229
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 A **2 Claims**

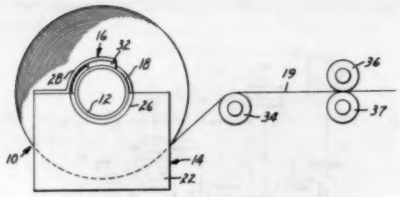


A method of and an apparatus for continuously producing small dispensing rolls of sheet in strips of small thickness, of such material as paper, film of synthetic resin, wafer, aluminum foil or the like, each roll including a required amount of such sheet of small thickness wound on a core.

3,734,424
WEB TENSIONING SUPPORT

John W. Ulseth, Saint Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 13, 1971, Ser. No. 142,948
Int. Cl. B65h 23/06
U.S. Cl. 242—75.4 4 Claims

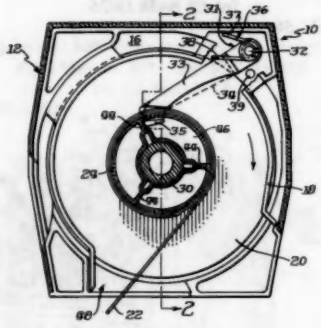


A web tensioning support for a roll of sheet material to permit the sheet material to be withdrawn from the roll by a generally uniform force. An arbor is formed to support the roll of sheet material for rotation therewith and the arbor is supported for rotation by an arbor support and brake which frictionally engages the arbor along a surface area spaced from the axis of the arbor. A constant braking torque is applied to the arbor to counterbalance the decrease in the force required to withdraw the sheet material from the roll against the frictional force applied by the arbor support and brake as the roll of sheet material is depleted.

3,734,425
MECHANICAL FILM SENSOR

Elmer C. Henriksen, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 16, 1971, Ser. No. 199,224
Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32
U.S. Cl. 242—187 4 Claims

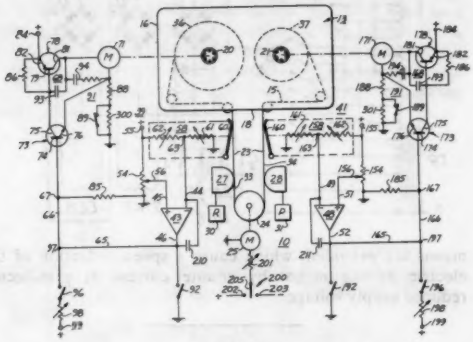


A film handling apparatus for a movie projector includes a cartridge supporting a reel of film and a mechanical film sensor. The sensor includes a film follower member integral with a reel blocking member for engaging and blocking rotation of a reel when the film follower senses a predetermined amount of film on the reel hub thereby providing film tension for actuating an automatic rewind mechanism in the projector.

3,734,426
TAPE TENSION CONTROL IN TAPE RECORDERS

Peter A. Howes, La Verne, and Eugene A. Cooper, Placentia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 15, 1971, Ser. No. 134,172
Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32
U.S. Cl. 242—190 32 Claims

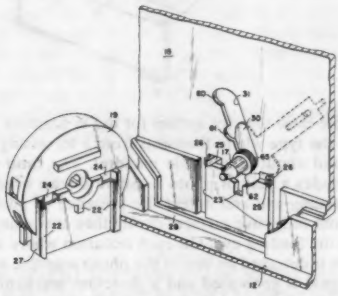


Magnetic tape recorders, or other apparatus utilizing an information recording tape, include equipment for forming a length of the recording tape into a loop and for placing a portion of the loop in driving engagement with the capstan. The loop is tensioned during its formation and placement onto the capstan. The tape recorder may also include equipment for sensing the tape tension, for providing a signal indicative of the sensed tape tension, and for controlling the tape tension in response to the latter signal. Typically, a closed-loop servo system including the recording tape is provided. A feedback factor in this servo system may be modified to effect a desired tape tension at instances when the servo system operates in an open-loop mode.

3,734,427
ADJUSTABLE SPINDLE ARM FOR MOTION PICTURE PROJECTORS

Allan M. Palmer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,554
Int. Cl. G03b 23/02
U.S. Cl. 242—197 8 Claims



A motion picture projector provided with means for supporting film supply cartridges of different film capacities with the rotational axes of their film supply reels at respective different predetermined positions includes a supply reel support spindle carried by an arm which is angularly adjustable about

an axis parallel to the spindle to selectively position the spindle at different ones of such predetermined positions of the reel axes. Preferably, detent means are provided to hold the arm at locations in which the spindle is at such predetermined positions.

3,734,428

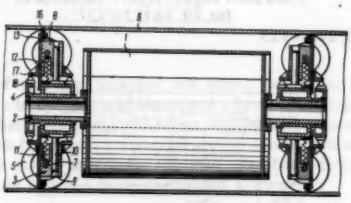
CARRIAGE FOR CONTAINERS

Adolf Moritsovich Alexandrov, Federativny prospekt 6, korpus 3, kv. 8; Yury Abramovich Isimbler, Sojuzny prospekt 10, kv. 261; Alexandr Alexandrovich Lachinov, ulitsa Zhivopisnaya 12, kv. 19; Vladimir Efimovich Aglitsky, Zatsepsky val 6/13, kv. 61; Ilya Solomonovich Kantor, ulitsa Malo-Maskovskaya 31, kv. 45, and Yury Arnoldovich Topolyansky, ulitsa Matveevskaya 10, korpus 4, kv. 233, all of Moscow, U.S.S.R.

Filed May 20, 1971, Ser. No. 145,302

Int. Cl. B65g *51/06*

U.S. Cl. 243—33 **1 Claim**



A carriage for containers transported along a tube under the gas pressure action, wherein running wheels are mounted on the hubs with the possibility of radial motion, while the disk receiving the pressure of a stream of gases flowing along the tube is composed of separate movable sector elements independently sealed between one another. Each sector element is connected to a wheel for common displacement therewith in a radial direction.

3,734,429

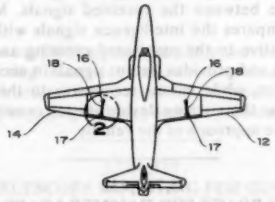
TARGET AIRCRAFT FLIGHT TERMINATION SYSTEM

Lloyd J. Holt, Ridgecrest; Harry L. Myers, and Gordon F. Zurn, Jr., both of China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 16, 1971, Ser. No. 163,227

Int. Cl. B64c *39/00*; C06c *5/04*

U.S. Cl. 244—1 R **6 Claims**



A remote controlled destruct system for aircraft or the like having fuel cells within critical structures. The filler cap in at least one fuel cell is replaced by a unique explosive device connected to remotely controllable firing means.

3,734,430

AIRCRAFT HAVING VARIABLE SWEEP-BACK WINGS

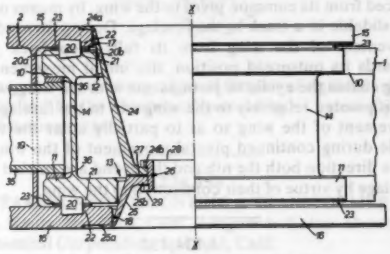
Stephen Ransom, Saint Annes-On-Sea, Lancashire, England, assignor to British Aircraft Corporation Limited, London, England

Filed Mar. 3, 1970, Ser. No. 24,414

Claims priority, application Great Britain, Mar. 7, 1969, 12,302/69

Int. Cl. B64c *3/40*

U.S. Cl. 244—46 **7 Claims**



A wing pivot assembly for an aircraft with variable-sweep-back wings, which comprises a pair of lugs secured to a wing and a cooperating pair of apertured lugs secured to the fuselage of the aircraft, the fuselage lugs lying between and close to the wing lugs. Both pairs of lugs are formed with coaxial central apertures, and the outer portions of the adjacent lugs are formed with opposed circular grooves coaxially surrounding the apertures, in which grooves are housed bearing rollers by which the upper wing lug is journalled on the upper fuselage lug, and the lower wing lug is journalled on the lower fuselage lug. The grooves may either be of trapezoidal section, for use with tapering rollers, or they may be of V-section for use with cylindrical rollers whose axes are radial and are inclined in alternately-opposed directions. A clamping device in the form of a pair of flanged rings whose outer flanges are engaged with the two wing lugs, the rings being drawn together by a nut-and-bolt device at their adjacent inner flanges to apply an axial clamping thrust to the pivot assembly.

3,734,431

VARIABLE-GEOMETRY AIRCRAFT

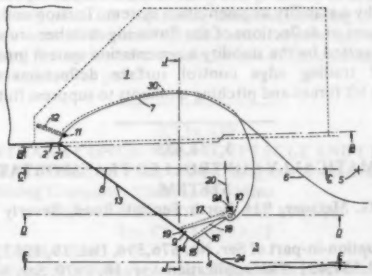
Arthur Neville Rhodes, and Denis Edward Blackburn, both of Fulwood, Preston, England, assignors to British Aircraft Corporation Limited, London, England

Filed May 25, 1970, Ser. No. 51,400

Claims priority, application Great Britain, May 27, 1969, 26,813/69

Int. Cl. B64c *3/56*

U.S. Cl. 244—49 **4 Claims**



A variable-sweep-back-wing aircraft, each wing of which is provided in the junction between its leading edge and the

fuselage with a wing root member formed in two portions, namely a nib lying adjacent to the fuselage and an eyelid lying intermediate between the nib and the wing, the nib and the eyelid both being pivoted to the wing about a common pivot which is parallel to the main wing pivot, and each being movable relatively to the wing and to the other, the nib and the eyelid together forming a continuation of the leading edge of the wing when the wing is in its fully-swept-back position, and the nib and the eyelid both lying wholly within the fuselage contour when the wing is in its outspread position of minimum sweep-back. The nib is also pivoted to the fuselage at a point spaced from its common pivot to the wing, by means of a pivot pin slidable in a track in the fuselage. During forward pivotal movement of the wing from its fully-swept-back position towards its outspread position, the initial movement of the wing causes the eyelid to pivot as one with the wing, while the nib is pivoted relatively to the wing and to the fuselage by the movement of the wing so as to partially enter the fuselage, while during continued pivotal movement of the wing in the same direction both the nib and the eyelid are carried into the fuselage by virtue of their connection to the wing.

3,734,432

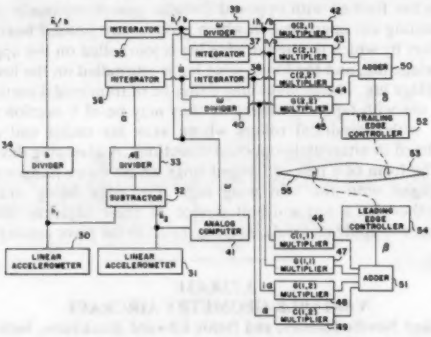
SUPPRESSION OF FLUTTER

George M. Low, c/o National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 25, 1971, Ser. No. 127,915

Int. Cl. B64c *13/18*

U.S. Cl. 244—77 G **5 Claims**



An active aerodynamic control system to control flutter over a large range of oscillatory frequencies unaffected by mass, stiffness, elastic axis, or center-of-gravity location of the system, mode of vibration or subsonic Mach number consisting of one or more pairs of leading edge and trailing edge hinged or deformable control surfaces, each pair operated in concert by a stability augmentation system. Torsion and bending motions or deflections of the fluttering member are sensed and converted by the stability augmentation system into leading and trailing edge control surface deflections which produce lift forces and pitching moments to suppress flutter.

3,734,433

AUTOMATICALLY CONTROLLED TRANSPORTATION SYSTEM

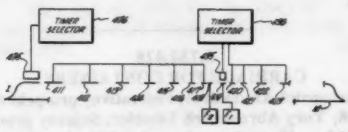
Robert G. Metzner, 916 North Fonthill Road, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 676,594, Oct. 19, 1967, Pat. No. 3,537,401. This application Apr. 10, 1970, Ser. No. 27,354

Int. Cl. B61l *23/00*

U.S. Cl. 246—1 R **8 Claims**

A transportation system is disclosed in which vehicles travelling along a track or roadway are automatically spaced in response to timing and speed controlling systems so as to assure proper spacing of intersecting vehicles. Vehicles energize



timing elements which apply signals to the vehicles to accelerate or decelerate them to achieve predetermined, desired speeds.

3,734,434

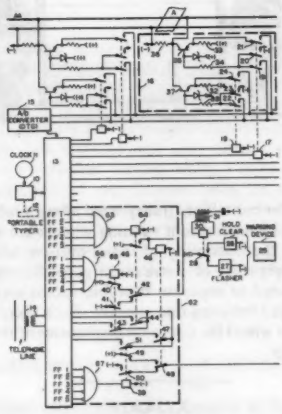
CONTROL OF MULTIPLE HIGHWAY CROSSINGS

Willis R. Smith, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed June 14, 1971, Ser. No. 152,848

Int. Cl. B61l *29/32*

U.S. Cl. 246—125 **7 Claims**



The apparatus controls operation of highway warning devices at a plurality of crossings in accordance with the approach of a railroad vehicle and includes a computer for calculating a uniform warning time for each crossing in response to signals received from the crossings. There is means responsive to computer control at each crossing for imposing on the rails a read and check signal at different times in accordance with a selected computer sequence. Receiver means is responsive to the received signal associated with the read and check signals from each crossing and has an output feeding the computer for providing digitial intelligence signals with respect to the difference between the received signals. Means at the computer compares the intelligence signals with anticipated responses relative to the associated crossing and other relevant crossings and provides output signals in accordance with the comparison, while means responsive to the comparison means activates the warning device at each crossing a uniform time before the approach of the vehicle.

3,734,435

BOTTOM BRACE FOR HAMMER LEADS FRAME

Leonard L. Frederick, 15 Crestview Terrace, Whippany, N.J.

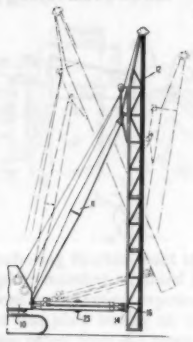
Filed May 11, 1971, Ser. No. 142,182

Int. Cl. E02d *7/14, 13/04*

U.S. Cl. 248—2 **15 Claims**

A pile driving machine having a boom and a leads frame universally pivotally connected thereto adjacent the upper

end thereof and a positioning and an adjustment securing frame having longitudinally adjustable side legs, each individually pivotally connected adjacent and opposite the lower side portions of said boom and to the lower side portions of said leads frame, and said side legs being each individually extendable on each side of their joint pivotal connection



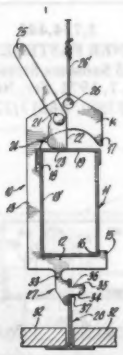
whereby of said legs adjacent will effect movement of said leads frame to or from said boom and whereby relative extension of either of said legs will effect desired lateral movement of said leads frame on its universal pivotal connection with the boom. The power means for effecting the above desired adjustments are effected by means on said X-frame.

3,734,436

CLIP FOR ATTACHING POWER DUCTS TO T-BARS

Milton Liberman, 65 Seawane Road, East Rockaway, N.Y.

Filed June 24, 1971, Ser. No. 156,322
Int. Cl. F16l *3/00*
U.S. Cl. 248—58 **4 Claims**



A clamp for supporting prewired ducts above a drop ceiling, the clamp having means for attachment to a supporting surface and to structural members of the drop ceiling and means for releasably engaging and supporting a prewired duct.

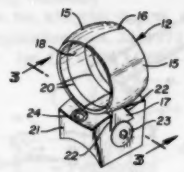
3,734,437

TELESCOPE MOUNTING FOR GUNS

Ralph H. Underwood, 6825 S. Pennsylvania St., Littleton, Colo.

Filed June 24, 1971, Ser. No. 156,229
Int. Cl. F41g *1/38*
U.S. Cl. 248—205 R **5 Claims**

Telescope mounting for guns which comprises a pair of rigid half ring members designed to embrace and surround a telescope, said rigid half ring members being provided with arcuate recesses on their inner surfaces for reception of a ring member which may be a split full ring or a partial ring which



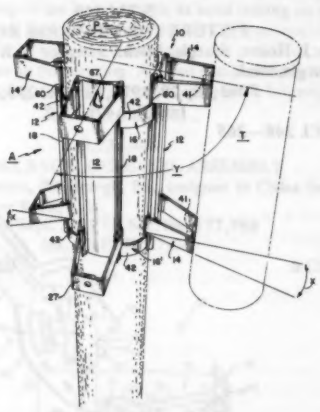
extends across the meeting edges of the pair of rigid half rings, characterized by the absence of protruding or externally exposed fastening means.

3,734,438

APPARATUS FOR MOUNTING A TRANSFORMER

Leon F. Kautz, Hayward, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sept. 24, 1971, Ser. No. 183,526
Int. Cl. F16m *13/02*
U.S. Cl. 248—221 **10 Claims**



Improved apparatus for mounting one or more transformers, in cluster fashion, about an upstanding pole support and the like. The apparatus is generally comprised of at least one support-engaging bearing plate, a transformer mounting bracket slidably connected to the bearing plate and an adjustable link subassembly slidably and pivotally interlocked to the bearing plate for facilitating unitized handling and quick emplacement of the bearing plate about a pole as well as for providing fine and extensive adjustment of the emplaced bearing plate about the pole.

3,734,439

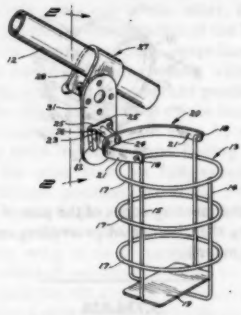
BEVERAGE CONTAINER RECEPTACLE AND CLAMP

Donald E. Wintz, St. Paul, Minn., assignor to Aladdin Manufacturing Company, Minneapolis, Minn.

Filed Oct. 22, 1971, Ser. No. 191,616
Int. Cl. F16m *13/02*
U.S. Cl. 248—224 **11 Claims**

A device for holding beverage containers, such as cans, bottles and glasses, in an upright position, mountable on an inclined tubular section such as a golf cart handle or a boat railing. A beverage container receptacle is detachably connected by clip means to angularly adjustable clamp means of the invention. The clamp is adjustable to mount on a tubular

section of any given angular inclination, while clip means are rigidly secured relative to the clamp and depend downward therefrom, thereby maintaining the beverage container recep-



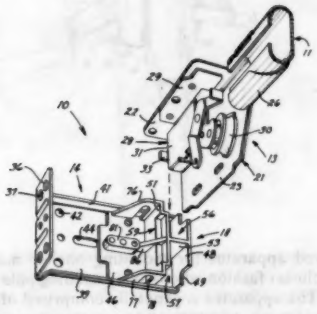
tacle in a generally vertical orientation. The beverage container receptacle is free swinging relative to the clip means, so that upon jarring or tilting of the tubular section, the receptacle will tend to maintain a vertical orientation.

3,734,440

FIXTURE FOR TRAVERSE ROD

John J. Hoare, Sturgis, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed July 20, 1972, Ser. No. 273,375
Int. Cl. A47h *1/10*
U.S. Cl. 248—265 **9 Claims**



A universal fixture for alternately supporting either end of a traverse rod is a molded plastic monolith. The fixture is usable with an end adapter of the kind having a substantially L cross-section trim portion and a substantially rectangular coupler behind and below the forward and upper elements of the trim panel and carrying a rearwardly extending tab. The fixture is adapted to be mounted upon a bracket having a forwardly extending arm. The fixture comprises a substantially planar base mountable on the bracket arm and spaced upstanding walls on the base centrally connected by a baffle and defining upwardly and downwardly opening channels alternately usable for receiving the coupler of end adapters on opposite end of the rod, the coupler being receivable within the upwardly opening one of the channels. A step on one such wall remote from the base provides an abutment for the tab of the end adapter to prevent longitudinal movement of the coupler out of the channel. Means are provided for rigidifying the walls and connecting the fixture to the bracket and end adapter trim panel.

3,734,441

TELESCOPIC SUPPORT AND IMPROVED MEANS OF LOCKING THE SAME

Philip G. Lux, Elkhardt, Ind., assignor to Lux Company, Inc., Elkhart, Ind.

Filed Sept. 9, 1971, Ser. No. 178,930
Int. Cl. F16m *13/00*
U.S. Cl. 248—354 **8 Claims**

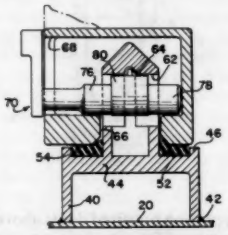
A telescopic support in which a pair of spring biased lock plates serve to prevent extended or retracted movement of an inner telescopic member relative to an outer telescopic member. The lock plate biasing spring is laterally spaced from the inner telescopic member and engages the lock plates to normally urge the plates into a tilted locked relationship.

3,734,442

CONTAINER FASTENER MEANS

Thomas T. Lunde, 1045 Sansome Street, San Francisco, Calif.

Filed Mar. 1, 1971, Ser. No. 119,785
Int. Cl. A62b *35/00*; B65j *1/22*; B61d *17/00*
U.S. Cl. 248—361 **9 Claims**



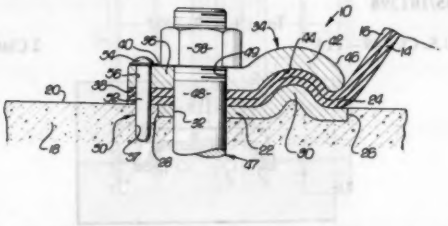
A fitting extends through the bottom access opening into the cavity of a corner casting on a container. The fitting has a bore formed through the upper portion thereof which is axially aligned with the side access opening of the corner casting. A fastener pin extends through the side access opening and said bore. The fastener pin includes at least one cam surface thereon whereby upon rotation of the pin the fitting and the corner casting are urged in opposite directions to firmly clamp the fitting to the corner casting.

3,734,443

ANCHORING MECHANISM FOR FLEXIBLE SHEET STRUCTURES

Ernest T. Fukuda, 2040 W. 30th St., Los Angeles, Calif.

Filed Apr. 1, 1971, Ser. No. 130,203
Int. Cl. E04b 1/56
U.S. Cl. 248—361 R 3 Claims



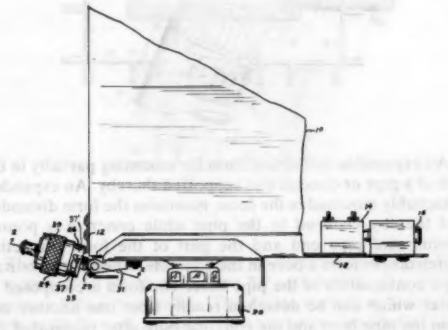
A device for anchoring flexible sheet structures on a solid mass including a plate member mounted in the mass with its opposite end regions representing exposed surfaces coplanar with the mass and said plate having an intermediate section with a configuration offset from the plane of said surfaces all presenting an upper surface. A clamp adapted to be located from said plate and having an engagement surface coinciding with the profile of the upper surface of the plate and anchor means extending from said mass through said plate and said clamp adapted to retain flexible sheet structures between said plate and said clamp.

3,734,444

SAFETY LOCKING DEVICE FOR AIRBORNE SHOCKMOUNTS

Robert E. Thorngate, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 8, 1971, Ser. No. 151,048
Int. Cl. B65d 45/24
U.S. Cl. 248—361 R 2 Claims



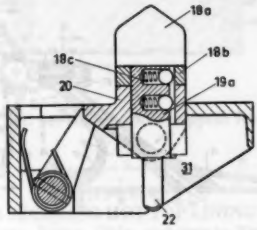
A safety locking device for securing electronic apparatus to airborne shockmounts having a cone washer for engaging a hook on the electronic apparatus. The cone washer is slidably supported on a hold down screw having flat sides which conform to flat sides of the cone washer to prevent rotation of the cone washer on the screw. A two part nut has a plurality of slots for engaging a plurality of pins on the cone washer, and a spring for maintaining the pins engaged in the slots. One part of the two part nut engages the threads on the hold down screw, and a second part is for turning the first part on the screw. Pins on the first part of the two part nut engage slots on the second part with a loose fit, to permit limited relative rotation between the two parts of the two part nut.

3,734,445

RETRACTABLE PIVOT BOLT ARRANGEMENT

Hans Werner, Stieglitz-Strasse 13; Baldur Koschinat, Schalbenstrasse 19, and Otto Vormbaum, Siemens-Strasse 2, all of 6078 Neu-Isenburg, Germany

Division of Ser. No. 870,590, Sept. 3, 1962, Pat. No. 3,643,906. This application Sept. 24, 1971, Ser. No. 183,606
Int. Cl. A62b 35/00
U.S. Cl. 248—361 7 Claims



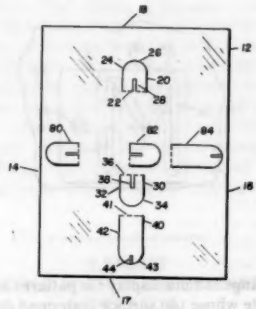
A pivot bolt arrangement for securing a container having socket-type openings to a housing mounted on a chassis frame support is arranged to be retracted into the housing when not in use. The housing forms a hollow or open space into which the bolt is retracted. The bolt extends upwardly through an opening in the top of the housing with its head resting on a collar. When the bolt extends through the socket-type opening in the container, it can be pivoted relative to the collar for securing the container to the housing. A pivot handle is attached to the bolt for rotating it and for retracting it into the housing.

3,734,446

FRAME BACK AND EASEL ASSEMBLY

William J. Crosson, Pittsburgh, Pa., assignor to Cities Service Company, New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,768
Int. Cl. E47b 97/04
U.S. Cl. 248—460 6 Claims



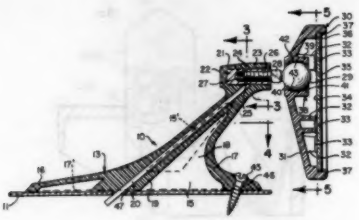
A novel picture frame back and easel combination comprising a flat back having three erectable cutouts linearly arranged in combination with an easel support. The combination comprises a back, a pair of erectable parallel spaced tabs each with a slit on their base and a finger also erectable in line with the tabs, parallel thereto and having a slit at the tip. An easel is combined with the back and comprises a leg having a flat elbow shaped joint, the joint having a flat surface approximating the distance between the tabs, and an upper rounded extension with a hook end, and a lower quadrant which are inserted into the tab slots.

3,734,447

REAR VISION MIRROR CONSTRUCTION

Ronald C. Perison, Sr., East Aurora, N.Y., assignor to Standard Mirror Company, Inc., Buffalo, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,789
Int. Cl. B60r *1/06*
U.S. Cl. 248—481 **15 Claims**



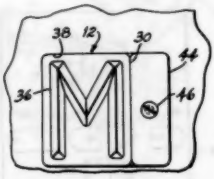
A rear view mirror construction including a molded plastic base member having a metal pin embedded therein with a portion of the pin protruding beyond the base member for insertion into an aperture in the side of a vehicle and a fastener member spaced from the pin and extending through the base member for attachment to the vehicle, a ball carried by the base member, and a molded plastic mirror case supporting a mirror and pivotally mounted on the ball by means of a socket having bosses therein which are shrunk into engagement on the ball for providing a tight fit therewith.

3,734,448

QUICK CHANGE INDICIA FOR PATTERNS AND THE LIKE

Gerald R. Rusk, and Robert E. Koch, both of Toledo, Ohio, assignors to The Freeman Supply Company, Toledo, Ohio

Filed Apr. 29, 1971, Ser. No. 138,715
Int. Cl. B41b *11/52, 11/58, 11/60*
U.S. Cl. 249—103 **8 Claims**



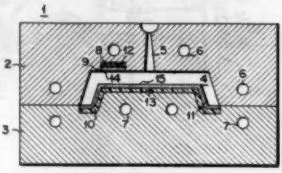
A quick change indicia display for patterns and the like having a base plate whose top surface is stepped down at one end, and which has a longitudinally extending keyway proceeding therefrom towards the opposite end. The sidewalls of the keyway adjacent the stepped down portion are parallel, and the indicia are formed on the top surface of indicia plates adapted to overlie the entire width of the base plate. The indicia plates have projections on the bottom thereof which extend down into the keyway and which have a longitudinal extent that is a fraction of that of the indicia plate; so that the indicia plate can be slid to a position overlying the parallel sidewall portion of the groove in the base plate and removed. The combined assembly above described is recessed into a pattern or the like, so that the indicia carried by the indicia plate will become an imprint in the molds produced therefrom.

3,734,449

METAL MOLD FOR INJECTION MOLDING

Moriyuki Itou, Iwatsuki-shi, Saitama-ken, and Takashi Aoba, Ageo-shi, Saitama-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 6, 1971, Ser. No. 169,785
Claims priority, application Japan, Oct. 14, 1970, 45/101398
Int. Cl. B29c *1/02*
U.S. Cl. 249—114 **2 Claims**



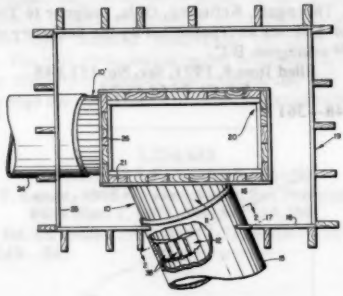
A metal mold for the injection molding, characterized in that a plastic piece being lower in thermal conductivity than the base metal of said metal mold is provided to form at least a part of the inside of said metal mold, and that a metal plating layer is deposited on the exposed surface of said plastic piece.

3,734,450

FORM FOR MOLDING A BORE IN CONCRETE

George W. Lengel, RFD No. 1, Pine Grove, Pa.

Filed Oct. 28, 1971, Ser. No. 193,271
Int. Cl. B22c *9/24*
U.S. Cl. 249—146 **4 Claims**



An expansible cylindrical form for mounting partially in the end of a pipe or conduit and supported thereby. An expander, detachably mounted in the form, maintains the form distended and thereby clamped to the pipe while concrete is poured around said pipe end and the part of the form projecting therefrom, to form a bore in the concrete, when set, constituting a continuation of the pipe bore. The form is composed of staves which can be detached readily from one another and from the pipe bore and the concrete bore after removal of the expander. The exposed ends of the staves can be cut off at a desired angle relative to the axis of the pipe to abut flush against an inner mold wall, the plane of which is not at a right angle to the pipe axis.

3,734,451

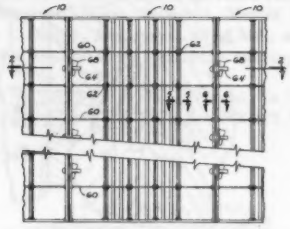
PANEL FOR CONCRETE WALL FORMS

Thomas W. Tierney, Independence, Mo., assignor to T-W-T Properties, Kansas City, Mo.

Continuation-in-part of Ser. No. 843,883, June 4, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,123
Int. Cl. E04g *11/08*
U.S. Cl. 249—192 **4 Claims**

A concrete wall form utilizes a plurality of interconnected, unitary metal panels. Each panel is comprised of one or more

extruded, channel-shaped intermediate sections and an extruded, channel-shaped end section at either end of the intermediate section. Each section has a pair of spaced flanges separated by an integral connecting portion and the flanges of adjacent sections are disposed in abutting relationship. To assure planar alignment of the connecting portions of the sections each abutting pair of flanges is provided with a V-shaped projection and a complementally configured recess. The projection is self-centering in the recess and accommodates a degree of mismatching between the two abutting sections. The aligned, abutting sections are held as a unitary assembly by a plurality of connecting bars which extend transversely of the longitudinal dimensions of the sections and intersect the flanges. The bars are welded to the sections in a manner to assure that no distortion of the aligned connecting portions takes place during the welding operation.

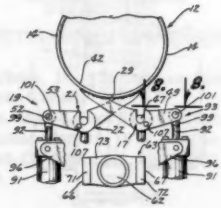


3,734,452

DEVICE FOR FORMING AND HANDLING CONCRETE PIPE

Richard P. Marsh, 103 Maple Street, Vernon, Mich.; Ralph E. Whannel, 1101 Rachael, Waterloo, Iowa, and Julius C. Basso, Owosso, Mich.

Filed Nov. 20, 1970, Ser. No. 91,513
Int. Cl. B28b *13/06*
U.S. Cl. 249—171 **4 Claims**



This disclosure relates to a device for forming and handling concrete pipe which is suitable for attachment to a vehicle having a lifting mechanism. The device comprises a concrete pipe mold formed in hingeably attachable, longitudinal sections and a mold handling apparatus, attachable to the lifting mechanism of the vehicle, for handling the mold and for stripping the mold from the concrete pipe. The mold is stripped from the concrete pipe by rotating two of the longitudinal mold sections about the hinges outwardly of the concrete pipe.

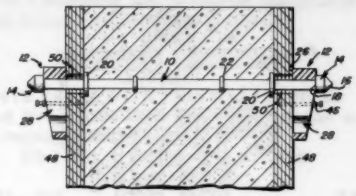
3,734,453

TIE ROD ASSEMBLY

Allen N. Bailey, 1607 South Locust Street, Denver, Colo.

Filed Dec. 18, 1970, Ser. No. 99,479
Int. Cl. E04g *17/06*
U.S. Cl. 249—213 **1 Claim**

A system for maintaining laterally spaced form boards for the reception of a concrete pour wherein the tie is of a non-conductive material and H-shaped in cross-section, the opposed brackets being specifically configured so as to bear directly against and provide the sole support for the opposed form boards.

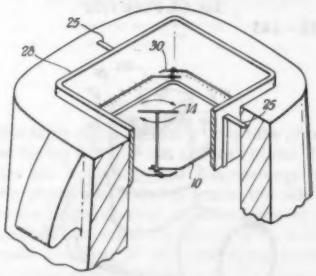


3,734,454

CLIP FOR SECURING HOT TOP LINING SLABS

Walter A. McCray, Berea, Ohio, assignor to Foseco International Ltd., Birmingham, England

Filed June 9, 1971, Ser. No. 151,499
Int. Cl. B22d *7/10*
U.S. Cl. 249—202 **4 Claims**



A clip for holding a hot top liner in place within a hot top casing. The clip has an annular, preferably rectangular, configuration, and includes at least one deformable section so that the size of the annulus may be changed. For example, the annulus may be formed of two L-shaped members arranged to form a rectangle, each end of each member being deformed inwardly at a 45° angle, and with adjacent end portions of the two L-shaped members overlapping each other in spaced apart relationship. A deformable link is attached to each of the adjacent end portions of the two L-shaped members, and is oriented at an angle of less than 90° relative to the end portions.

3,734,455

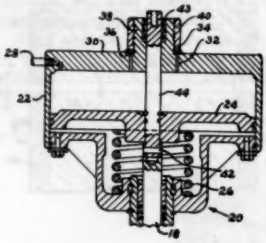
SAFETY DEVICE FOR A FLUID CYLINDER VALVE ACTUATOR

Paul J. Natho, Houston, and Felix J. Vicari, Longview, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 21, 1971, Ser. No. 182,345
Int. Cl. F15b *13/10*; F16k *31/143*
U.S. Cl. 251—62 **3 Claims**

A remotely controlled fluid pressure actuator has a valve stem extending through the actuator cylinder and a threaded projection on the top of the cylinder. The cylinder has venting ports adapted to be closed by an O-ring when the latter is pressed down by a sleeve on the threaded projection. An auxiliary override for local operation of the valve is adapted to be connected to the threaded projection in place of the sleeve. The auxiliary override cannot be screwed down far enough to

hold the O-ring closed, so that the cylinder is vented to prevent remote operation of the valve while the auxiliary over-



ride is attached and necessitating removal of the auxiliary override before the actuator can again be placed in normal service.

3,734,456

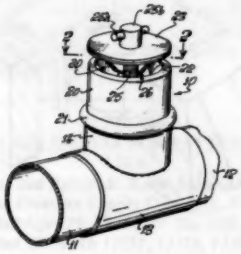
VALVE WITH AXIAL SCREW ASSEMBLY

Andre J. Varrin, Oregon City, and William L. McCarter, Portland, both of Oreg., assignors to Pan American Enterprises, Portland, Oreg.

Filed June 9, 1972, Ser. No. 261,364

Int. Cl. F16k *1/02*

U.S. Cl. 251—145 **3 Claims**



A valve of the irrigation riser type, intended primarily for discharging irrigation water, under low pressure head, in controlled volume, in an annular discharge stream. The valve consists of a typical riser cylinder, with an inwardly folded annular shoulder at the upper end, and a disk closure plate adjustably supported above the annular shoulder by means of an axial screw threadably received in a spider in the interior of the riser cylinder. The spider is comprised of an assembly of several identical spider arm segments, extending outwardly and upwardly from the center of the riser cylinder, and an internally threaded bushing which is retained in place within said assembly of spider arm segments. Preferably, the riser cylinder and the spider arm segments are ferrous and welded, while the bushing is a corrosion-resistant non-ferrous material.

3,734,457

PRESSURE BIASED BUTTERFLY VALVE SEAL

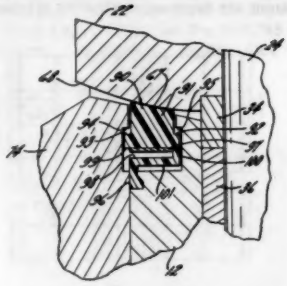
William N. Roos, St. Cloud, Minn., assignor to DeZurik Corporation, Sartell, Minn.

Continuation-in-part of Ser. No. 104,280, Jan. 6, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,204

Int. Cl. F16k *1/228*

U.S. Cl. 251—173 **17 Claims**

A resilient seal ring is located in a stepped, annular groove in a valve body with a portion of the ring extending radially inwardly into the flow passageway and a peripheral web of the ring extending radially outwardly into the deeper portion of the groove. One or more metal hoops encircle axially extending shoulders on the ring to take up the primary hoop stresses imparted to the ring by the valve closure member. In the preferred embodiment the ring is made of a fluorinated hydrocarbon polymer and an annular spring engages one side of the web portion of the ring to provide a secondary seal with



the groove. Pressure entering the groove urges the spring and the web portion axially into more positive engagement with one another and urges the ring radially into more positive engagement with the closure member.

3,734,458

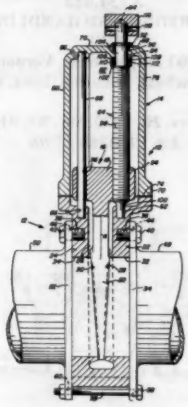
GATE VALVE

John D. Tricini, Greensburg, and Edward L. Schmitt, Pittsburgh, both of Pa., assignors to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed May 11, 1971, Ser. No. 142,185

Int. Cl. F16k *31/50*

U.S. Cl. 251—267 **8 Claims**



The gate valve has a body portion with coaxial inlet and outlet openings in the side walls and valve body chamber with opposed converging valve seats. A wedge member has a body portion with a depending wedge shaped gate portion that is movable vertically into a valve chamber within the body portion to control the flow of fluid through the valve body portion. A cover member is secured to the upper face of the valve body and has an elongated chamber communicating with the valve chamber in which the wedge member moves vertically. A guide pin and valve stem are positioned within a cover chamber in spaced parallel relation to each other and on opposite sides of the longitudinal axis of the gate portion of the wedge member. The wedge member body portion has a longitudinal passageway on one side of the gate portion through which the guide pin extends. The wedge member body portion has a second vertical threaded passageway on the other side of the wedge member gate portion through which the threaded valve stem extends. Rotation of the valve stem moves the wedge member vertically within the chamber of the cover in a manner that the gate portion of the wedge control the flow of

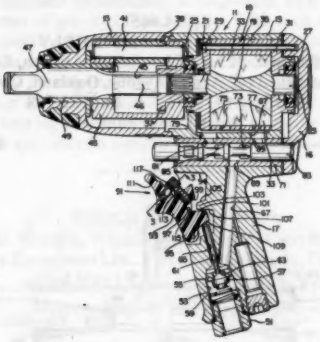
fluid through the valve body chamber. The valve body, because of the offset stem configuration, is relatively short in length and may be positioned between closely adjacent pipe flanges.

3,734,459

HANDLE AND TRIGGER CONSTRUCTION

William D. Sauerwein, Joppa, Robert A. Meloni, Baltimore, and Harvey J. Walter, Joppatown, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Division of Ser. No. 65,954, Aug. 21, 1970, Pat. No. 3,666,027.
This application Feb. 28, 1972, Ser. No. 229,774
Int. Cl. F16k *51/00*
U.S. Cl. 251—285 **4 Claims**



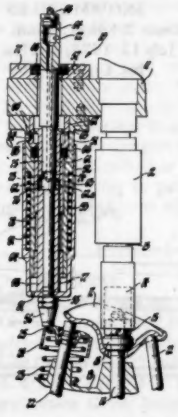
A portable tool including a housing having a rotary pneumatic motor disposed therein and coupled to a tool spindle. Compressed air is delivered to the motor by conduit means which includes passage means in a handle dependent from the housing. A throttle valve is disposed within the handle and is controlled by a trigger pivoted upon the handle. The trigger and handle are provided with novel adjustable stop means to limit trigger movement.

3,734,460

AUTOMATIC SETTING MOTION-SENSING CONTROL DEVICE

Frederick C. Clarkson, Jr., 126 Johnson Street, Niagara-on-the-Lake, Ontario, Canada

Division of Ser. No. 45,290, June 11, 1970, Pat. No. 3,695,362.
This application Mar. 10, 1972, Ser. No. 233,503
Int. Cl. F16k *1/32*; B23q *5/00*
U.S. Cl. 251—321 **3 Claims**



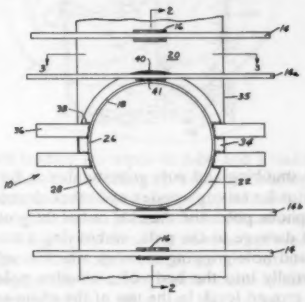
An automatic setting motion-sensing control device in the form of a sensing air valve which closes and sets its initial measurement point upon engagement with a workpiece and then opens upon a predetermined movement of the workpiece, relieving air pressure in the line. The resultant pressure drop is picked up by a pneumatic relay to stop the operation of a motion causing device operating on the workpiece.

3,734,461

GATE VALVE WITH THIN WALLED HUBS

Harry Fred Burger, San Francisco, Calif., assignor to Walworth Company, Bala Cynwyd, Pa.

Filed Sept. 3, 1971, Ser. No. 177,608
Int. Cl. F16k *27/00*
U.S. Cl. 251—366 **7 Claims**



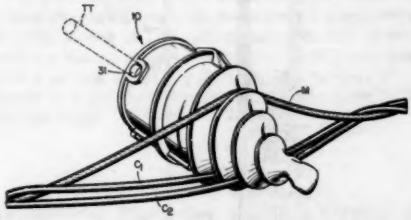
A gate valve body structure with a body tube of rectangular cross-section having flat side and end wall plates. Thick reinforcing plates are welded around the openings in the end walls, and tie plates are extended across the side walls and secured between lateral portions of the reinforcing plates. Tubular pipe sections with relatively thin walls are welded to and around circular openings in the reinforcing plates to form hubs. The tie plates may be formed from the circular portions removed from a plate to accommodate the hubs and end plate openings. Hoop-like reinforcing ribs embrace the body tube, with the pair adjacent the top and bottom portions of the reinforcing plates being secured thereto.

3,734,462

APPARATUS FOR SPREADING APART ELECTRIC POWER CABLE WIRES

Harry Boone Slade, Amherst, N.H., assignor to Hendrix Wire and Cable Corp., Milford, N.H.

Filed Nov. 11, 1971, Ser. No. 197,740
Int. Cl. B60p *1/00*
U.S. Cl. 254—1 **7 Claims**



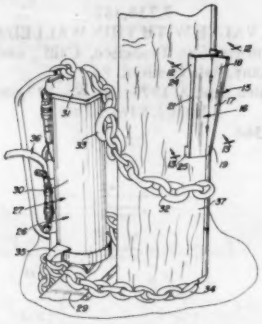
Wedge-like, spiral threaded tool for separating wound together aerial electric power cable wires by inserting and rotating therebetween to spread the wires apart into a position in which they can be individually manipulated.

3,734,463

CHAIN SNUBBING AND POLE-GRIPPING DEVICE FOR POLE-RAISING APPARATUS

Dennis J. Enright, 1706 Happ Road, Northbrook, Ill.

Filed Feb. 7, 1972, Ser. No. 224,201
Int. Cl. E21b 19/00
U.S. Cl. 254—30 11 Claims



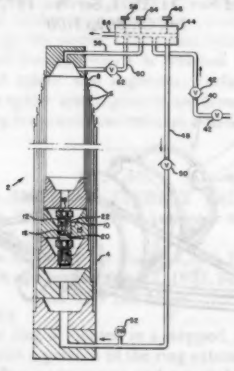
A chain-snubbing and pole-gripping device for a pole-raising apparatus for raising wooden and other electric power line poles, telephone poles and the like, out of the ground, without substantial damage to the pole, embodying a toothed chain-snubbing and pole-gripping member which is adapted to be driven partially into the body of a wooden pole, somewhat above the ground level. In the use of the chain-snubbing and pole-gripping device, a flexible means, preferably in the form of a flexible chain member, encircles the pole and extends over the chain-snubbing and pole-gripping device, and fluid power-operated means in the form of a hydraulic or pneumatic piston-cylinder device is provided for raising the flexible chain member, thereby causing the flexible chain member to grip the chain-snubbing and pole-gripping device and thus raise the pole a predetermined increment. The operation may by repeated by removing the chain-snubbing and pole-gripping device from the pole and relocating it on the pole at a lower level until the pole is completely raised out of the ground in successive increments.

3,734,464

CONTROL SYSTEM FOR MULTI-STAGE LIFT

Sherman W. Bushnell, Jr., 1214 East Hamlin No. 4, Seattle, Wash.

Continuation-in-part of Ser. No. 889,235, Dec. 30, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,566
Int. Cl. B66f 3/24
U.S. Cl. 254—93 R 10 Claims



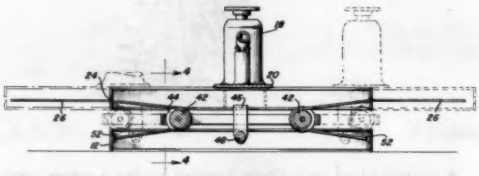
A compressible fluid operated multi-stage telescopic hoist for operating to a given load limit. The hoist has a plurality of stages progressing from a base stage of largest cross section to a top stage of smallest cross section. The bottom stage together with a predetermined group of intermediate stages comprises a bottom set of stages and the remainder of the intermediate stages with the top stage comprise a top set of stages. A supply means is interconnected with said stages for selectively supplying a compressible fluid at a predetermined pressure well above the minimum pressure required and the fluid is introduced to the hoist whereby the bottom set of stages is more rigid and at a higher pressure than the superposed column of the top set whenever the hoist assembly is extended beyond said bottom set. The hoist further includes vent means for selectively venting said sets whereby the pressure in the bottom set is maintained at least as high as the pressure at the top set while the hoist assembly is being retracted.

3,734,465

TRAVELING JACK ASSEMBLY

Thomas N. Patchen, 325 Carolyn Street, Auburn, Calif., and Roy R. Patchen, 3742 Ardley Avenue, Oakland, Calif.

Filed July 19, 1971, Ser. No. 163,718
Int. Cl. B66f 3/00
U.S. Cl. 254—84 12 Claims



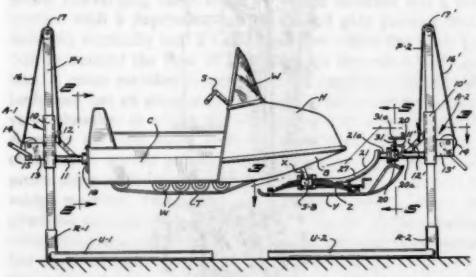
A traveling jack assembly comprising a movable jack carriage support frame mounted above a support base of similar size and configuration with an intermediate roller assembly therebetween, such that longitudinal movement of the roller assembly through a distance on the support base produces twice the longitudinal movement of the jack carriage. The roller assembly is manipulated by way of a pair of cables or belts extending through openings in each end wall of the jack carriage, and the jack carriage is provided with a downwardly extending interlock, or connecting frame, having a pair of wheels which engage a guide channel in the support base.

3,734,466

LIFT DEVICE FOR VARIABLY DISPLAYING AND FACILITATING REPAIRS OF VEHICLES SUCH AS SNOWMOBILES

Merle C. Mason, Route 2, Spicer, Minn.

Filed July 12, 1971, Ser. No. 161,750
Int. Cl. B66f 7/00
U.S. Cl. 254—89 6 Claims



A lift device for variably supporting vehicles such as snowmobiles to facilitate display and repair thereof, employs a pair

of rigidly supported, upstanding mounting posts variably spaced apart distances to longitudinally accommodate vehicles varying in length. An adjustable supporting assembly is slidably mounted on each of said posts, one assembly being constructed for interconnection with the rear part of the vehicle on a horizontal axis which is substantially in alignment with the longitudinal center of gravity of the vehicle. The second supporting assembly, slidably adjustable on the second post fixedly carries a trunnion-like horizontal member for rotative interconnection and support of a forward hub member of a laterally adjustable unit. Said unit is constructed for lift-interconnection with conventional elements of a number of vehicles varying in width, and which elements are conventionally disposed below the front of the body and adjacent the sides thereof. The said forward hub of the adjustable unit in use will also be disposed substantially in alignment with the longitudinal center of gravity of the vehicle. With such rotative support connections substantially aligned with center of gravity the vehicle, when elevated to a desired position for viewing or repair may be angularly swung to numerous positions along the center of gravity line, even to an inverted position and positive locking means are provided for retaining the hub and vehicle in any one of a number of desired positions.

3,734,467

WIRE WALL PARTITION

Robert G. Weeden, Woodbridge, Ontario, Canada, assignor to Anthes Equipment Ltd., Port Credit, Ontario, Canada

Filed May 19, 1971, Ser. No. 144,773

Int. Cl. E04h *17/04*

U.S. Cl. 256—65 **2 Claims**

A wire wall partition made up of sections and uprights. Each of the sections has a pair of upright members and a pair of horizontal members forming a generally rectangular framework. Each of the members defines a slot for receiving a thickened peripheral portion of a wire mesh so that the members can be slid onto the mesh and once in position, clamped in place using corner brackets. Further brackets are provided for attaching each section to the uprights which may be attached permanently to a floor and ceiling or alternatively be of a type having a compression spring to permit frictional engagement of the upright between floors of a building under construction.

3,734,468

MIXING DEVICES

David Chung-Hsun Cheng, Letchworth, England, and John Brian Davis, Dumfries, Scotland, assignors to National Research Development Corporation, London, England

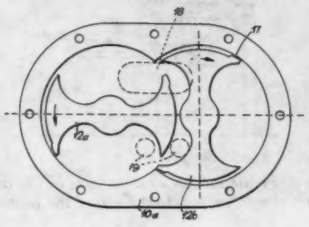
Filed Feb. 2, 1971, Ser. No. 112,010

Claims priority, application Great Britain, Feb. 3, 1970, 5,225/70

Int. Cl. B01f *7/16*

U.S. Cl. 259—6 **10 Claims**

A mixing device is proposed comprising a chamber defined by two circular cylindrical lobes in part overlapping parallel relation. Each lobe houses a similar rotor rotatable about the lobe axis, the rotors being maintained in a predetermined intermeshing contra-rotating relation. Each rotor has like symmetrical section along its length defined by a pair of radial arms. Each arm has concave sides, with adjacent ones of these sides merging into convex axial portions, and radially outer peripheries which pass closely adjacent the lobes surfaces. This geometry defines leading and trailing peripheral tips



whereby each leading tip wipes its lobe and a trailing tip side of the other rotor, each trailing tip wipes the leading tip side of the other rotor, and each arm periphery rolls around an axial portion of the other rotor. Material to be mixed is charged and discharged axially for batch or continuous operation, and the rotors can provide a screw action for the latter operation. Similar arrangements involving more lobes in the chamber, and/or more arms for each rotor, can be evolved.

3,734,469

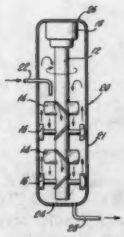
REACTOR VESSEL AND UP-DOWN MIXER

Arnold M. Goldstein, Whippany; Edward Effron, Springfield, and Jack M. Hochman, Boonton, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 31, 1970, Ser. No. 103,181

Int. Cl. B01f *7/16*

U.S. Cl. 259—8 **2 Claims**



A mixer comprising sets of multi-bladed 45° axial impellers for providing substantially perfect mixing in a cylindrical reactor vessel having an L/D ratio greater than one. A first set of impellers located closest the impeller shaft pump downward while a second set of impellers located outwardly from the first set of impellers pump upward enhancing the flow along the vessel walls.

3,734,470

POLISHING APPARATUS

Manfrid Dreher, Engelsbrand, Neuenburg, Germany, assignor to Dr. Ing. Manfrid Dresher KG, Engelsbrand, Germany

Filed Sept. 8, 1971, Ser. No. 178,632

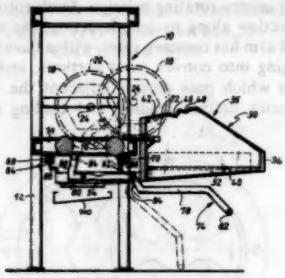
Claims priority, application Germany, June 16, 1971, P 21 29 840.8

Int. Cl. B01f *9/04*

U.S. Cl. 259—89 **9 Claims**

A frame mounting a pair of rotatable rollers forming a seat for a cylindrical drum container. Means for receiving the

drum after mixing and means for lifting the drum from the rollers into the receiving means with the axis of the drum maintained in parallel relationship to the axis of the rollers.



3,734,471

DEVICE FOR CONTINUOUS MIXING OF SOLIDS WITH LIQUIDS

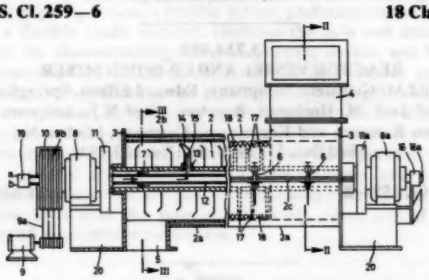
Kaspar Engels, 68 Mannheim 31, Germany, assignor to Firma Draiswerke GmbH, Speckweg, Germany

Filed Aug. 31, 1971, Ser. No. 176,534

Claims priority, application Germany, Nov. 24, 1970, P 20 57 594.4; Mar. 23, 1971, P 21 13 960.6

Int. Cl. B01f 7/04

U.S. Cl. 259—6 **18 Claims**



A method and device for uniformly wetting wood chips with glue in which the wood chips are propelled along a helical path with the glue being applied by centrifugal action concentrically and radially in finely dispersed form.

3,734,472

SCREW EXTRUDER

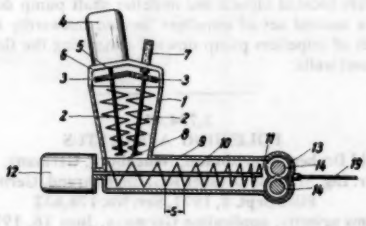
Harald Strohmeier, 8605 Kapfenberg, Austria, assignor to Gebr. Bohler & Co. AG., Kapfenberg, Austria

Filed Feb. 3, 1971, Ser. No. 112,384

Claims priority, application Austria, Feb. 10, 1970, 1174/70; Feb. 10, 1970, 1172/70

Int. Cl. B01f 7/08

U.S. Cl. 259—192 **2 Claims**



The screw extruder serves to form a coating on welding electrodes and comprises a feed hopper, two feeder screws, which are disposed in the feed hopper and mesh with a backlash, a precompacting screw, which is disposed below the feed hopper, a first housing surrounding said precompacting screw, two high-pressure screws, which mesh substantially without backlash, and a second housing surrounding the two high-pressure screws. The feeder screws are operable to deliver coating composition to the precompacting screw and the latter is operable to deliver coating composition to the two high-pressure screws.

3,734,473

AIR VALVE TYPE CARBURETOR

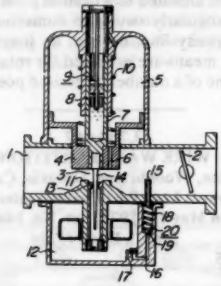
Hisanori Moriya, and Yukio Hosho, both of Katsuta-shi, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Jan. 5, 1971, Ser. No. 104,007

Claims priority, application Japan, Jan. 16, 1970, 45/3832

Int. Cl. F02m 9/06, 7/06

U.S. Cl. 261—44 R **19 Claims**



An air valve type carburetor in which a nozzle is disposed in an air passage between an air valve and a throttle valve, and said nozzle is communicated with a float chamber through a passage with a check ball disposed therein, whereby at the time of acceleration fuel is injected from the nozzle by making use of a negative pressure appearing in the vicinity of said nozzle.

3,734,474

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

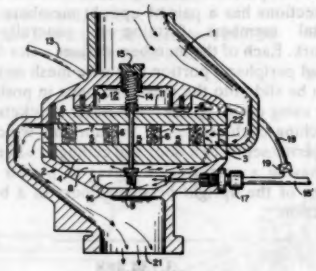
Pier Luigi Olati, 27010 Santa Cristina Bissone, Pavia, Italy

Filed Oct. 30, 1970, Ser. No. 85,571

Claims priority, application Italy, Oct. 31, 1969, 32453 A/69

Int. Cl. F02m 17/28

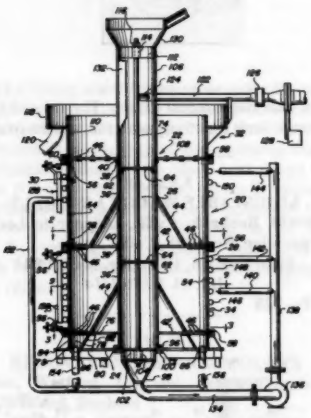
U.S. Cl. 261—95 **6 Claims**



A very fine subdivision of the gasoline in a carburetor and complete combustion are achieved by means of a microporous body, prepared from sintered granulated iron. The microporous body is placed in a tank which is connected with a suction duct for the flow of air. The microporous body is longitudinally crossed by a slot, provided with cylindrical columns made of porous materials. The microporous body and the columns are soaked in gasoline. The gasoline flows

through a hole, the opening of which is regulated by the vertical oscillatory motion of a conical needle, the motion being provided by a diaphragm and by an adjustable spring. On the opposite side of the suction duct, is a gate constituted of two bulkheads, the opening and closing of which are controlled by the accelerator. Air touches the surface of the columns on which are formed microscopic myriads of gasoline drops and a fine mist is formed.

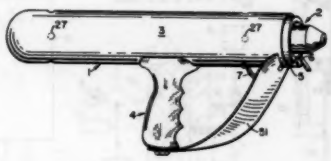
3,734,475
LIQUID-SOLID REACTION APPARATUS
Thomas Valle, P.O. Box 331, Carbondale, Colo.
Filed Jan. 31, 9172, Ser. No. 222,154
Int. Cl. C22b *15/12*
U.S. Cl. 266—12 **8 Claims**



Liquid-solid reaction apparatus for carrying out a continuous flow process, as for example, the production of copper by the reaction of dilute copper sulfate liquors with iron in the form of finely divided powders or particles. A liquid-solid slurry is introduced at a controlled rate into the upper end of a vertical tube which extends coaxially through a cylindrical chamber. The flow of slurry from the lower end of the tube is divided and passed through a plurality of individual coils wound about the exterior of the outer chamber. The flow of slurry from the coils is recombined at the lower end of the chamber and passed upwardly through the annular flow passage defined between the outer side of the inlet tube and the inner wall of the chamber. The slurry is discharged from an outlet at the upper end of the chamber. During its flow through the central tube and chamber, the slurry is subjected to agitation to maintain the slurry in a thoroughly mixed condition. The external coils are likewise distorted or compressed at spaced locations to establish a turbulent slurry mixing action to the slurry as it passes through the coils.

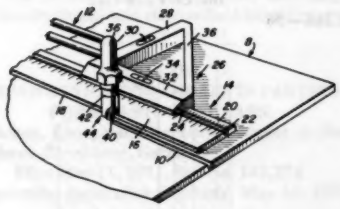
3,734,476
CUTTING TORCH
Allen L. Holzman, Palo Alto, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 13, 1971, Ser. No. 179,891
Int. Cl. B23k *7/00*
U.S. Cl. 266—23 R **10 Claims**

A method for cutting metal is disclosed in which a fuel and an oxidizer are burned within a combustion chamber at higher than ambient pressures to produce a gas stream comprising an oxidizer-rich core surrounded by a fuel-rich sheath. This gas stream is caused to impinge upon a body of metal to be cut at approximately sonic velocities by passing the gas stream through a choked nozzle arranged with respect to the combustion chamber so that the oxidizer-fuel orientation in the gas stream is maintained. Portable hand-held apparatus for



generating the cutting gas stream are disclosed which employ a solid fuel material and a solid oxygen generating material to produce a portable self-contained unit.

3,734,477
GUIDE FOR CUTTING TORCH
Nick Enfantino, 1723 Willon St., San Jose, Calif.
Filed July 19, 1971, Ser. No. 163,768
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 M **2 Claims**

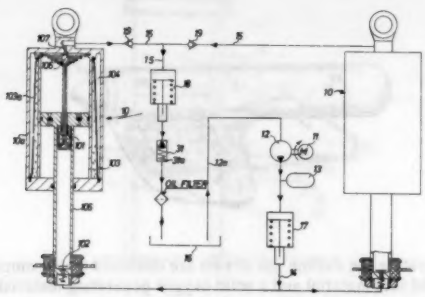


A readily applicable and removable supporting and steadying guide for use on the flame emitting tip of a manually manipulatable cutting torch. The torch and tip are conventional. The guide comprises a split expansible and contractible brass or equivalent collar herein defined as an adapter and whose lower edge is provided with a pair of diametrically opposite depending selectively usable legs for supportively elevating, gauging and steadying the height of the flame tip. These legs are circumferentially separated by diametrically opposite clearance notches.

3,734,478
HYDROPNEUMATIC SHOCK ABSORBING ARRANGEMENT FOR AUTOMOTIVE VEHICLES OR THE LIKE
Manfred Lohr, 5868 Letmathe, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany
Filed June 11, 1971, Ser. No. 152,268
Claims priority, application Germany, June 13, 1970, P 21 22 651.7; June 13, 1970, P 20 29 351.0
Int. Cl. B60g *11/56*
U.S. Cl. 267—34 **22 Claims**

A shock absorbing arrangement for use in automotive vehicles has several self-levelling hydropneumatic struts, a pump and an accumulator for pressurized hydraulic fluid, a tank for hydraulic fluid, and two mechanically operating delay units the first of which delays the expansion of struts to their normal length and the second of which delays the contraction of struts to their normal length. The first delay unit is installed in a con-

duit which connects the pump and the accumulator with inlets provided in the piston rods of the struts and the second delay

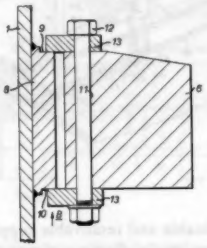


unit is installed in a conduit which connects the outlets of the struts with the tank.

3,734,479
HOLLOW VESSEL WITH ANNULAR EXTERNAL SUPPORT RING

Donald Alan Atkinson, Teesside, England, assignor to Ashmore, Benson, Pease & Company Limited, Stockton-on-Tee, Teesside, England

Filed Jan. 19, 1972, Ser. No. 218,939
Int. Cl. F27b 7/22
U.S. Cl. 266—36 **9 Claims**



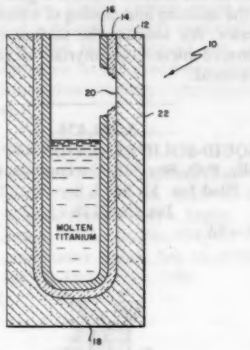
A hollow vessel, conveniently a converter for use in a steel making process, has at least one annular ring surrounding it. The ring is removably secured to the wall of the vessel by pairs of clamping members attached to either the ring or the vessel and clamped on to opposed surfaces on the vessel or the ring respectively. Removable keys extending substantially parallel to the axis of the vessel and positioned between the clamping members and projections on the vessel reduce angular movement between the vessel and ring almost to zero.

3,734,480
LAMELLAR CRUCIBLE FOR INDUCTION MELTING TITANIUM

Charles A. Zanis, Bowie, and Richard L. Helferich, Crownsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1972, Ser. No. 224,537
Int. Cl. F27b 14/10
U.S. Cl. 266—39 **4 Claims**

A lamellar crucible for induction melting titanium has an outer graphite shell closed at one end to form inner and outer surfaces. A first layer generally of the class of refractory metals or of beryllium oxide covers the inner surface of the shell to limit carbon contamination. A second layer is preferably oxygen deficient yttrium oxide and may also be generally of the class of rare earth metal oxides in an oxygen deficient condition. Also, the second layer may be yttrium

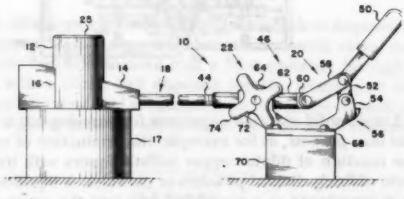


oxide or the rare earth metal oxides. The second layer covers the first layer to limit reactivity with the molten titanium.

3,734,481
ADJUSTABLE WEDGE ASSEMBLY

Michael Surwill, Burbank, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 16, 1970, Ser. No. 89,844
Int. Cl. B25b 1/14
U.S. Cl. 269—228 **15 Claims**



A wedge assembly adjustable from a remote position from the wedge, for supporting forgings undergoing machining on a worktable or for other purposes. A riser member slidably mounted in a body member is supported by a wedge seated on the body member and disposed in a slot in the riser. The wedge is longitudinally displaceable through the slot by a push-pull rod whose one end is connected thereto. At the other end of the rod, remote from the riser, a toggle arrangement for axially displacing the rod and a stem-and-handle means for locking the rod at a particular displacement is provided. The body member supporting the wedge and riser is securable to the worktable under a portion of the forging or other workpiece desired to be held during machining or during other operations on a workpiece. The load of the forging or workpiece passes directly through riser, wedge and body member to the worktable, while the remotely positioned stem-and-handle and toggle arrangement facilitate the proper positioning for the wedge prior to work on the workpiece. Proper elevation of the riser member to contact the forging avoids excessive lifting of the forging or workpiece. The problem of excessive lifting exists with use of conventional jacks, resulting in an out-of-tolerance condition upon removal of the machined element from the worktable. However, use of plurality of these assemblies avoids such problem.

ERRATUM

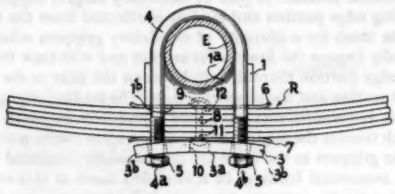
For Class 267—34 see:
Patent No. 3,734,478

3,734,482

DEVICE FOR FIXING A LEAF SPRING

Michel Duchemin, 59 Lambres les Douai, France, assignor to Ressorts Du Nord S.A., Douari, France

Filed Apr. 29, 1971, Ser. No. 138,698
Claims priority, application France, Apr. 29, 1970, 7015651
Int. Cl. F16f 1/26
U.S. Cl. 267—52 9 Claims



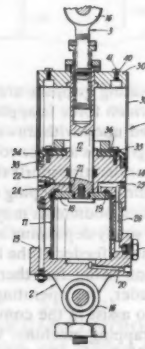
A device for fixing a leaf spring to an axle of a vehicle. The device comprises two clamping elements between which the spring is clamped by two U-shaped fixing members tightenable by nuts screwed thereon. One of the clamping elements is a resiliently-yieldable plate which has a bent shape in the free state so that it is applied against the spring throughout its surface area after the fixing members are tightened. In this way, the spring is prevented from bending in its center part (weakened by openings for assembly members) and wear, produced by rubbing along the ends of the clamping elements, is markedly reduced.

3,734,483

RECOVERABLE SHOCK MOUNTS

John Adams, Watford, England, assignor to S.G. Brown Limited, Watford, England

Filed May 10, 1971, Ser. No. 141,701
Claims priority, application Great Britain, May 12, 1970, 22,947/70
Int. Cl. F16f 5/00
U.S. Cl. 267—65 17 Claims



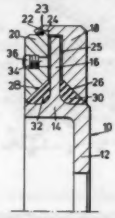
A recoverable shock mount for mounting gyroscope and like apparatus against shock comprises a cylinder connected to the vessel or other support for the apparatus, and containing a face seal plate connected to the apparatus by a piston rod. Fluid normally urges the plate against one end of the cylinder with a force in moderate excess of that required for support, but after displacement under shock restores the plate under a lower excess force. The mount may be responsive to compressive or tensile shock or to both. A plurality of the mounts may be interconnected so that all collapse in response to the collapse of one, to preserve the apparatus against tilt.

3,734,484

TORSIONAL VIBRATION DAMPER

Jeffrey Hall, Huddersfield, England, assignor to Houdaille Industries Inc., Buffalo, N.Y.

Filed Apr. 2, 1971, Ser. No. 130,736
Int. Cl. F16k 7/00
U.S. Cl. 267—137 6 Claims



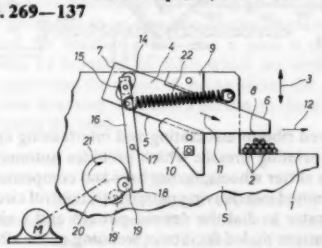
The invention relates to a torsional vibration damper comprising a hub member, an inertia member comprising at least two parts and being disposed about a peripheral portion of the hub member to define a cavity and a viscous fluid disposed in said cavity, each of said two parts of the inertia member being cut away in a region adjacent the hub member, and an elastic tuning element formed from a high resilience, low hysteresis material located in each said cut away portion in such manner that each said elastic element is under both axial and radial compressive stress to locate positively said inertia member both axially and radially relative to said hub member, and also acts as a seal between said hub member and said inertia member whereby to seal said viscous fluid in said cavity.

3,734,485

HOLD-DOWN DEVICE FOR SHEARS IN PARTICULAR FOR BAR STOCK SHEARS

Siegfried Klaus, Ennepetal, Germany, assignor to Paul Ferd Peddinghaus, Gevelsberg, Germany

Filed May 11, 1971, Ser. No. 142,274
Claims priority, application Germany, May 14, 1970, P 20 23 517.0
Int. Cl. B23q 3/02; B26d 7/02
U.S. Cl. 269—137 6 Claims



A device for holding work pieces to be cut on supporting means of shears, which includes a holding member guided so as to be continuously inclined toward said supporting means and to be movable simultaneously along the inclination of said holding member and toward a work piece supporting horizontal surface of said supporting means while eccentric means periodically withdraw said holding means from said supporting means.

3,734,486

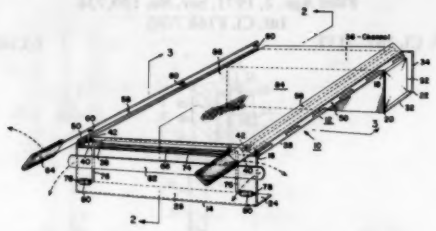
MIXING BOARD

Wallace E. Peacey, 145 Favinger Road R.D. 2, Pottstown, Pa.

Filed Sept. 10, 1971, Ser. No. 179,467
Int. Cl. A47j 43/00; A61c 19/02
U.S. Cl. 269—302.1 15 Claims

A board on which a batch of materials may be mixed, e.g., plastic materials used in automobile body repair work, is pro-

vided with means for cradling a box of wax paper, which may be drawn from the roll thereof in the box forwardly over the board. The board is provided with means for drawing the wax



paper taut across the mixing board and for releasably securing the opposite sides of the sheet of wax paper and the leading end thereof to the board.

ERRATUM

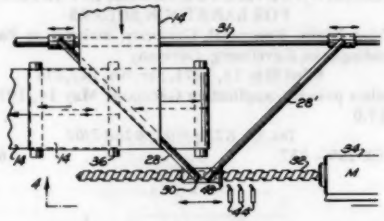
For Class 269—228 see:
Patent No. 3,734,481

3,734,487

AUTOMATIC RIBBON ASSOCIATING APPARATUS

Ernest H. Treff, Groton, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 31, 1970, Ser. No. 103,021
Int. Cl. B65h *39/00*
U.S. Cl. 270—52 **14 Claims**



An improved ribbon associating and interleaving apparatus for web fed printing presses which provides automatic positioning of the slitter wheels, turner bars and compensator rolls for predetermined interleaving patterns. A control circuit enables the operator to dial the desired pattern and a visual display of the pattern dialed facilitates webbing of the ribbons. A system both for fixed ribbon width folders and for variable ribbon width folders is disclosed.

3,734,488

MECHANISM FOR SUCCESSIVELY DELIVERING SHEET ARTICLES FROM A STACK

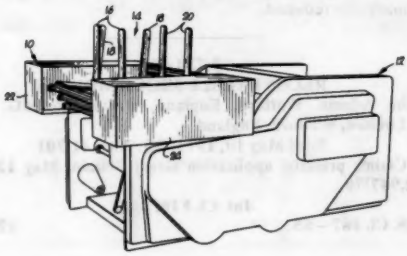
Warren W. Hannon, and Charles N. Hannon, both of Olathe, Kans., assignors to said Warren W. Hannon, by said Charles N. Hannon, Olathe, Kans.

Division of Ser. No. 751,011, Aug. 7, 1968, Pat. No. 3,608,891, which is a continuation-in-part of Ser. No. 665,540, Sept. 5, 1967, abandoned. This application Nov. 2, 1970, Ser. No. 86,283
Int. Cl. B65h *3/30, 3/42, 39/02*
U.S. Cl. 270—58 **14 Claims**

Bottom delivery feeders are employed in conjunction with a newspaper folding and wrapping machine and serve to sequentially feed sections of a newspaper into the machine for collation with the main body of the newspaper. One, two or three of such feeders of varying design may be used with the folding and wrapping machine in various operational configurations, depending upon the nature of the sections to be collated with the main newspaper.

One feeder embodiment is particularly adapted to feed multileaved newspaper sections from a stack thereof. A hopper receives the stack of newspaper sections, a shelf beneath the stack being utilized to support the trailing edge portion of the lowermost section. A pair of stationary fingers supports the leading edge portion and feeding is effected from the bottom of the stack by a plurality of oscillatory grippers which frictionally engage the lowermost section and withdraw the leading edge portion thereof from between the next to the lowermost section and the support fingers. The trailing edge portion of the lowermost section is then withdrawn by pinch rollers which receive the leading edge portion upon return movement of the grippers as the same are continuously oscillated to provide sequential feeding. In a modified form of this embodiment, a single, reciprocable support finger is employed and is particularly adapted for use in the feeding of thin supplements with a hard edge at the fold only.

A second feeder embodiment is particularly suited for the feeding of tabloid size sheets which require folding prior to collation with the main newspaper. The same basic operational principles are employed in the withdrawal of the leading edge portion of the lowermost sheet from the hopper. How-



ever, continuously rotating grippers are used in conjunction with a roller against which force is applied by the grippers to pinch the loop (formed upon withdrawal of the leading edge portion) between the grippers and the roller to guide the same into a delivery conveyor that transports the withdrawn sheet in folded form to the folding and wrapping machine. The feeders of the first and second embodiments may both be mounted on the machine and used singly depending upon the nature of the paper to be fed. When the feeder of the first embodiment is in operation, the sections being fed therefrom are conveyed through the other feeder, the operating components of the latter being adapted to assist in the conveying of the sections to the folding and wrapping machine. When it is desired to employ such other feeder to feed tabloid sheets to the machine, it operates in the normal manner and the first feeder is inoperative at this time.

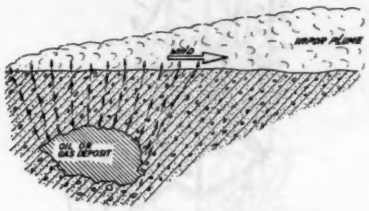
A top delivery feeder for sequentially delivering wrappers to the folding and wrapping machine operates in conjunction with either of the above feeders and employs a plurality of rotary grippers which are brought into frictional engagement with the uppermost wrapper of a stack thereof during each revolution of the grippers. The grippers are driven by a common shaft but are coupled with the shaft in a manner to permit the grippers to rotate ahead of the shaft free of the latter as each wrapper is advanced from beneath the grippers by a conveyor that receives the leading edge of each wrapper as it is fed from the stack.

3,734,489

METHOD OF PROSPECTING FOR HYDROCARBONS

George H. Milly, Potomac, Md., assignor to Geomet Mining and Exploration Company, Rockville, Md.

Continuation-in-part of Ser. No. 804,219, March 4, 1969, Pat. No. 3,609,363. This application May 13, 1971, Ser. No. 143,107
Int. Cl. G01v 9/00
U.S. Cl. 73—23 13 Claims



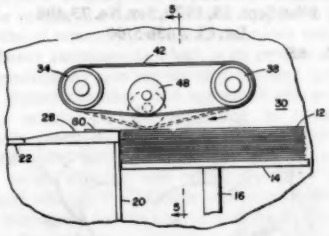
Prospecting, particularly prospecting for hydrocarbons such as oil and gas on the basis of the mobile gaseous phase of hydrocarbons which diffuses through the earth's structure and becomes windborne.

3,734,490

DOCUMENT FEEDING MECHANISM

James D. Parks, P. O. Box 30, Iowa City, Iowa

Filed Nov. 29, 1971, Ser. No. 202,936
Int. Cl. B65h 3/04, 9/16
U.S. Cl. 271—34 6 Claims



An apparatus for successively feeding documents, such as sheets or cards, edgewise from a stack of the documents. A flexible belt movable about a pair of spaced-apart wheels overlies the stack of documents with the belt normally moving above the top document in the stack. An idler wheel is positioned between the wheels inside of the belt's path and is movable up and down to force the belt downward to engage the top document in the stack and move it edgewise from the stack.

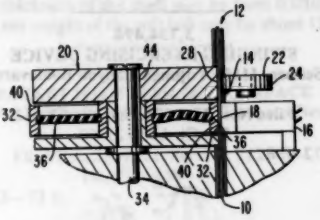
3,734,491

MOVABLE GAP-CONTROL DEVICE

Jack Beery, Farmington, and William B. Templeton, Howell, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 17, 1971, Ser. No. 143,756
Int. Cl. B65h 5/06
U.S. Cl. 271—51 12 Claims

A device for uniformly urging a transported paper sheet or the like into contact with a processing element where a sheet-bearing surface formed by the periphery of a rotatable resilient member is positioned in contact with the processing element. Driving means frictionally coupled to the resilient member urges the contacting portion of the sheet-bearing surface in the direction of sheet transport but a frictional restraint between the processing element and the sheet-bearing surface holds the resilient member rotationally motionless until such time as a document is transported therebetween. Upon this occurrence the frictional force imparted to the resilient



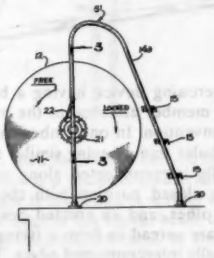
member is utilized to overcome the inertia of the resilient member and thus to assist in the acceleration of the sheet-bearing surface in the transported direction of the sheet.

3,734,492

ROTARY POOL SLIDE WITH ONE-WAY BRAKE

Jay M. Hartstein, 18557 Asuncion St., Northridge, Calif.

Filed Aug. 7, 1972, Ser. No. 278,488
Int. Cl. A63g 31/00
U.S. Cl. 272—1 B 9 Claims



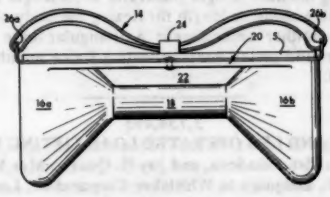
A pool entertainment device having a wheel large enough to allow a person to sit or stand on its rim wherein the wheel is supported for rotation along side a pool is disclosed. The wheel may be mounted by stairs which are connected to the frame supporting the wheel. A brake allows the wheel to turn in only one direction such that a person on the wheel may ride only towards the pool.

3,734,493

SIT-UP EXERCISE APPARATUS

John Hasekian, 108 Putman St., Watertown, Mass.

Filed Nov. 12, 1971, Ser. No. 198,348
Int. Cl. A63b 11/00
U.S. Cl. 272—84 7 Claims



A multipurpose weighted exercising device which comprises: a dumbbell having a short connecting element, the element secured to weighted elements at each end of the connecting element; a platform parallel to the connecting element, the platform having each end secured to one end of the

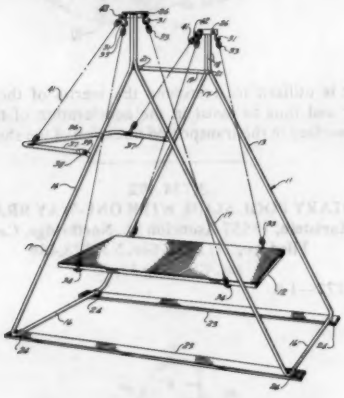
weighted elements of the dumbbell; and a U-shaped restraining strap secured at each end of the platform and in the middle of the platform to permit the insertion of the user's feet between the U-shaped strap elements and the platform.

3,734,494

SWINGING EXERCISING DEVICE

John W. Sellner, 11150 Tujunga Canyon Boulevard, Tujunga, Calif.

Filed Nov. 25, 1970, Ser. No. 92,612
Int. Cl. A63b *21/00*
U.S. Cl. 272—58 **19 Claims**



A versatile exercising device having a base and swinging body supporting member attached to the base is provided in practice of this invention. In one embodiment the base is in the form of a tubular frame having similar rectangular frame members pivotally interconnected along one edge so as to pivot between a closed position with the frame members parallel to each other, and an erected position wherein the frame members are spread to form a triangular base and an apex at the pivotally interconnected edges. Thus, a transverse bar extends across the base at the apex. An elongated body supporting member is connected adjacent the apex by links so as to hang with its mid-point approximately below the apex. Four links from approximately the apex to respective points on each side and remote from the middle of the body supporting member permit it to be swung in the direction of its length, transverse to the bar at the apex. The links are of a sufficient length that an occupant on the body supporting member can reach the apex bar or side edges of the frame members with a hand or a foot for propelling the body supporting member in a swinging manner. A horizontal bar transverse to the direction of swinging is connected to one of the frame members so as to be above and adjacent one end of the body supporting member so that an occupant can reach it with a hand or foot for exerting propulsive force. In one embodiment the body supporting member is rigid. In another embodiment the body supporting member is rigid transverse to its length and elastically flexible along its length for flexing the body of an occupant. In another embodiment a triangular base folds for storage around pivots interconnecting frame members at the lower end.

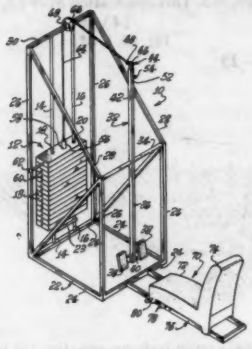
3,734,495

A SEAT AND LEG OPERATED LOAD LIFTING DEVICE

Donald E. Nist, Pasadena, and Jay H. Quartz, Mar Vista, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 26, 1971, Ser. No. 192,420
Int. Cl. A63b *23/04*
U.S. Cl. 272—58 **3 Claims**

An improved weight training device particularly adapted for exercise of the lower limbs includes a simple lever to the lower end of which are connected foot pedals. The lever is pivoted at about its midpoint and is telescopically extendable. The upper end of the lever is connected via a cable or chain to the upper end of a weight stack. Movement of the upper end of the lever



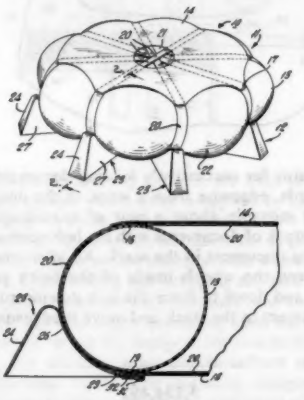
by corresponding movement of the lower end of the lever in the opposite direction is accomplished by pushing against the foot pedals, so as to raise or lower the weight stack. The device includes a seat positioned a suitable distance from the foot pedals on the side opposite the stack.

3,734,496

STABILIZED TRAMPOLINE

Herbert Rubin, New York, N.Y., assignor to New York Toy Corporation, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,400
Int. Cl. A63b *5/00*
U.S. Cl. 272—65 **9 Claims**

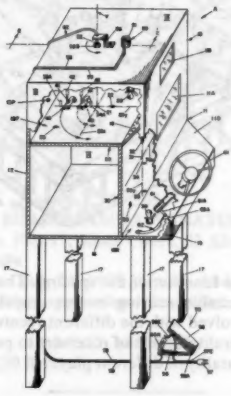


A trampoline includes an inflated elastomeric toroid, such as a tire inner tube, provided with taut top and bottom webs interconnected by straps extending between the webs about the tube outer surface. A stabilizer against tipping is separably associated with the trampoline and extends around the tube outer underface. Examples of stabilizers are circumferentially spaced hollow stackable wedge shaped foot pieces separably connected at their inner ends to the bottom web and engaging the tube underface, diametric cross-bars sandwiched between the tube and bottom web and projecting beyond the tube, outerwardly directed loops secured to the bottom webs and holding stabilizing members below the tube outer face, and a narrow inflated torus underlying the tube inner under face.

3,734,497
APPARATUS FOR SIMULATING CROSS-COUNTRY DRIVING CONDITIONS

Richard L. Brown, Bellevue, Nebr., assignor to Midway Manufacturing Company, Schiller Park, Ill.

Filed Jan. 14, 1972, Ser. No. 217,795
Int. Cl. A63f 9/14
U.S. Cl. 273—1 E **15 Claims**

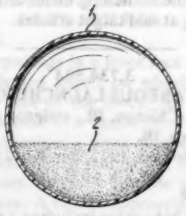


There is disclosed herein apparatus enabling an externally positioned operator to peer forwardly toward a light transmissive mirror located within and generally sub-dividing an upright hollow housing into a pair of internal chambers, a miniature vehicle in a first chamber is adapted to travel in annular paths of remotely controlled selectable radii through a first chamber environment which is an inverse mirror-image superimposition by said mirror of a diorama located in the housing second chamber. The apparatus also preferably includes a rollable vehicle remaining in contact with a moderately contoured shelf in the first chamber, remotely controlled speed control means for the annularly movable vehicle, means to sense and record proximity between the vehicle and selected first chamber environmental features, attractive lumination for the vehicle and the diorama while the shelf member remains relatively visually subdued, and sophisticated means for varying the vehicle's radial position so as to tax the operator's depth perception and coordination.

3,734,498
SOFT BALL WITH INTERNAL DRAG

William K. Seiersen, Erie, Pa., assignor to Louis Marx & Co., Inc., New York, N.Y.

Filed Aug. 17, 1971, Ser. No. 172,531
Int. Cl. A63b 37/10
U.S. Cl. 273—63 E **3 Claims**

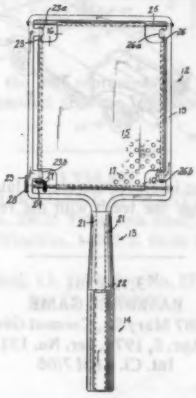


A soft ball has an outer shell of a resilient polymeric material and is partially filled with a fine, dry, granular solid. When rolled on a hard surface the drag of the granular solid and the work of flexing the shell slow the ball and bring it to a stop after rolling a relatively short distance. The intent is to simulate the roll of a hard Bocce ball on a yielding surface such as a lawn. The outer diameter of the soft ball may be about 3 ⅜ inches, the thickness of the shell may be from 0.050 to 0.080 inches, and the weight of the soft ball may be about 12 ounces.

3,734,499
RACKET WITH RESILIENT SURFACE

Frederick A. Goldstein, 30 Fountain Terrace, New Haven, Conn.

Filed Dec. 28, 1971, Ser. No. 212,979
Int. Cl. A63b 51/12
U.S. Cl. 273—73 E **6 Claims**

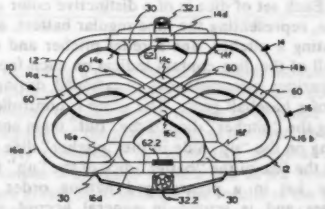


A game racket, such as a tennis racket, in which the game ball contact surface is a resilient membrane such as plastic film. The membrane is tensioned in several directions at once by spindles on the edge of the racket head, the spindles being connected by bevel gears and rotated by a ratchet wheel and pawl.

3,734,500
COMPETITIVE VEHICLE DEMOLITION GAME

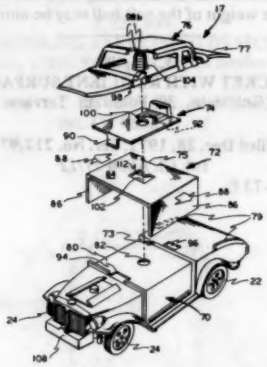
Julius Cooper, New Hyde Park, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,436
Int. Cl. A63f 9/00
U.S. Cl. 273—85 R **15 Claims**



Toy cars operate on independent roadways having multiple intersection points. Switches are provided for steering each vehicle toward or away from the intersections to control the time of entry of the cars into the intersections. Each cars comprises a plurality of releasably assembled body elements held in assembled condition by a latch including a depending post attached to the roof element and extending through an opening in a web member. A tooth on the post and a tooth extending into the opening of the web member interengage to hold the post down against the bias of a post encircling spring. A

depending side panel is attached to each end of the web member. Impact on either side member due to a collision of



the cars at one of the intersections causes lateral movement of the web to disengage the teeth with the resulting car disassembly.

3,734,501

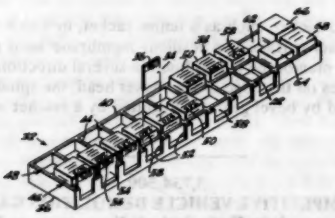
BASEBALL GAME

John La Monica, 3387 Mary St., Coconut Grove, Miami, Fla.

Filed Apr. 5, 1971, Ser. No. 131,249

Int. Cl. A63f 7/06

U.S. Cl. 273—93 R **6 Claims**



This invention pertains to a baseball game which provides a game board, including indicia generally representative of a typical baseball diamond, two sets of dice, one representing each team and a compartmented "dug-out" tray for each set of dice. Each set of dice is of a distinctive color and includes nine dice, representing the nine regular batters, and one dice representing a pitcher, one a relief pitcher and one a pinch hitter. All of the dice contain indicia on each facet which indicates various circumstances occasioned during the active playing of a baseball game. The game is controlled generally by rolling the "pitcher" dice of the "out" team and the indicia appearing on the "up" side of the "pitcher" dice sequentially controls the fate of the "batter" dice of the "up" team as they come to bat in a prearranged batting order. The game progresses and is scored in general accord with regular baseball rules.

3,734,502

MAGNETIC GAME STRUCTURE

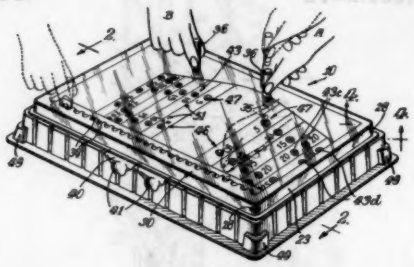
Douglas R. Bolton, Palatine, Ill., assignor to Cadaco, Inc., Chicago, Ill.

Filed June 3, 1971, Ser. No. 149,646

Int. Cl. A63b 71/02

U.S. Cl. 273—95 R **16 Claims**

A game structure such as for play by several persons on a table testing the skill of the players relative to dropping markers into subjacent receivers. The markers may comprise magnetic elements with control of the movement thereof being effected by the user through the medium of a suitable magnet. The receivers are spaced at different distances from the playing surface so as to require corresponding increase in the skill



of the players as a function of the spacing. The game may be provided with suitable scoring means correlated with the degree of skill involved with the different receivers. The game may include a plurality of sets of receivers to permit play by a corresponding plurality of different players.

3,734,503

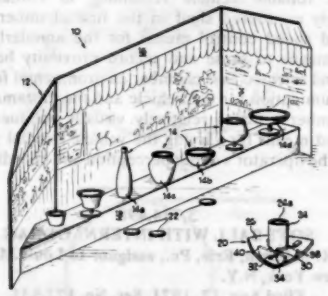
TARGET AND ADJUSTABLE TRAJECTORY DISC LAUNCHER

Jeffery D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 16, 1970, Ser. No. 81,445

Int. Cl. A63b 71/02

U.S. Cl. 273—101 **2 Claims**



A target game including target articles and means defining a target support area for supporting the target articles thereon and a movable missile launching member being adjustable in elevation for aiming at said target articles.

3,734,504

SIMULTANEOUS LAUNCHING GAME

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

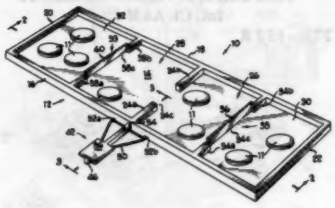
Filed Dec. 30, 1971, Ser. No. 213,894

Int. Cl. A63f 3/00

U.S. Cl. 273—126 R **3 Claims**

A skill-type launching game including a game board divided into opposing zones, by means of a medial barrier having an opening therein with a gate for closing the opening in the medial barrier. Each opposing zone is further divided into launching zones, by means of transverse barriers having interruptions therein for permitting a playing piece to travel

therethrough and a plurality of disc-like playing pieces for propelling from one end of the game board into the opposite

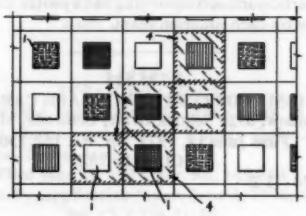


end in an effort to place all of the playing pieces in an opponent's scoring zone.

3,734,505
BOARD GAME APPARATUS

Raits Germanis, Flat 17, Knox Court, 53 King William Road, Unley, Australia

Filed July 20, 1971, Ser. No. 164,248
Claims priority, application Australia, July 24, 1970, 1968/70
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R **4 Claims**



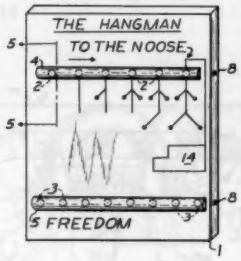
Apparatus for use in a game by which expertise in exploration and development of ore bodies can be gained in a realistic manner, the apparatus including a board with areas marked out and onto which a number of tiles can be randomly placed, one on each area, there being sets of tiles with differing markings for each set on their back and each set having a different but known number of valuable tiles so that each marked area of the board has a greater or lesser probable value than other such areas of the board. The board areas are dimensioned to receive pegging (claiming) members which have openings dimensioned to receive a tile, the pegging members being marked to designate ownership by a player.

3,734,506
BOARD GAME APPARATUS

Robert J. Gingrass, 721 Duncan Street, Schofield Barracks, Hawaii

Filed June 25, 1971, Ser. No. 156,829
Int. Cl. A63f 3/00
U.S. Cl. 273—130 E **4 Claims**

Parallel rows of openings in a front face of a block expose blank spaces or selected letters on wheels mounted within cavities in the rear face of the block. An elongated curved magnifying glass mounted over each row of openings enlarges the letters. Player A writes a word in a space between the parallel rows of cavities on the rear face of the block and slides a cover over the word. Player B chooses letters to complete the hidden word. Player A rotates appropriate wheels from the back to expose chosen correct letters of a word in proper sequence in the bottom row or to expose improper unused chosen letters in the top row. If the top row is filled first, Player A wins. If openings in the bottom row which spell out the word are filled first, Player B wins. The openings in the upper row form the head portions of representations of a human figure which is progressively completed from one row

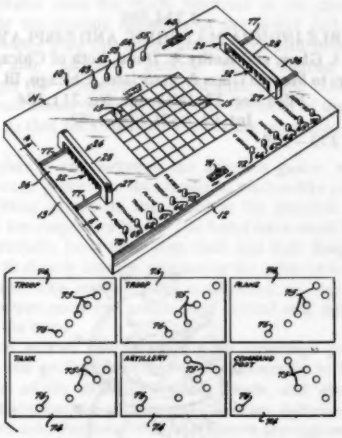


end to the other, the end representation being a complete human figure suspended above a representation of a hangman's platform.

3,734,507
BOARD GAME APPARATUS

Arnold R. Hillman, 25821 Telegraph Road, Flat Rock, Mich., and Harvey T. Winckles, 14942 S. Dixie Highway, Monroe, Mich.

Filed Aug. 13, 1971, Ser. No. 171,664
Int. Cl. A63f 3/00
U.S. Cl. 273—134 A **7 Claims**



Apparatus including a game board on which movable playing pieces of different categories are mounted and computer cards to determine the number of moves to be made and indicate the categories of the playing pieces involved, the moves being selectively controlled by individual players. A card sensing mechanism is disposed at each end of the board, and signal lights are arranged to indicate the results of the sensing. The game combines chance and skill to reach a predetermined point value.

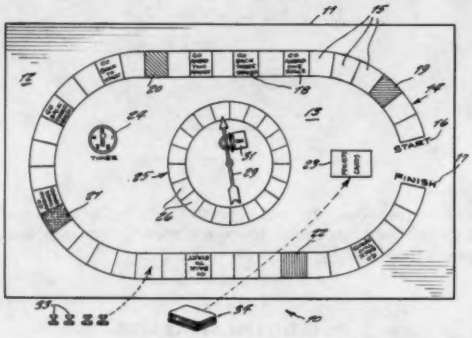
3,734,508
TIME LOCK BOARD GAME APPARATUS

Larry F. Snyder, 324 Lake St., St. Ignace, Mich.

Filed Sept. 7, 1971, Ser. No. 178,318
Int. Cl. A63f 3/00
U.S. Cl. 273—134 C **1 Claim**

A game for being played competitively between several players, and wherein the object of the game is for a player to

find a right key and open a lock before a bell goes off on a timer, the first player to reach a finished first being declared a winner, the game including a game board, 12 penalty cards, a



plastic lock and 6 keys of which only one will open the lock, a timer, a singular die and four playing pieces each of a different color.

3,734,509

INVISIBLE INDICIA MATCHING AND DISPLAY DEVICE

Marvin I. Glass, and Kathy A. Dunn, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 23, 1971, Ser. No. 211,184

Int. Cl. A63f *9/00, 1/02*

U.S. Cl. 273—139 **9 Claims**

A game including a plurality of playing cards each having one of a set of characters printed thereon and a display device to be used in connection therewith for randomly exhibiting a second set of characters one at a time. The second set of characters are the same as those printed on the playing cards wherein the object of the game is to match the character printed on a playing card with the same character exhibited by the device. The characters printed on the playing cards are normally invisible and become visible only after exposure to concentrated light. The display device has a light for illuminating the normally invisible card characters.

3,734,510

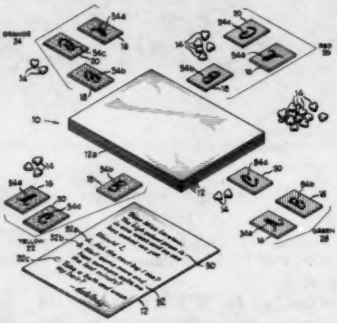
MATCHING ANSWER GAME

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 4, 1971, Ser. No. 185,955

Int. Cl. A63f *1/00*

U.S. Cl. 273—152 R **1 Claim**



A chance game including playing tokens, a plurality of master sheets, having situations depicted thereon and multiple keynoted solutions to the situations so depicted, and key cards for each participant corresponding to keynotes for each possible solution on each situation sheet.

3,734,511

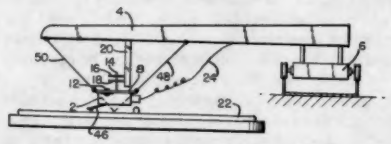
STRING-SUPPORTED PHONOGRAPH CARTRIDGE

Jacob Rabinow, 6920 Selkirk Drive, Bethesda, Md.

Filed June 14, 1971, Ser. No. 152,730

Int. Cl. G11b *3/02*

U.S. Cl. 274—1 R **6 Claims**



To reduce the mass of the cartridge-tonearm system of a phonograph pickup to a minimum, the arm is completely eliminated and the cartridge is supported on two pairs of thin strings attached at their upper ends to a servo-driven carriage and at the other ends to four spaced points on the cartridge at such an angle that the projection of the strings of each pair meets at the surface of the record to provide a virtual axis of rotation at the surface of the record at a point below the cartridge, so that the stylus will move substantially in a perfect straight vertical line when playing a warped record and will follow the record with an extremely small effective mass as seen by the stylus.

3,734,512

TONE ARM ASSEMBLY FOR AUTOMATIC PHONOGRAPH

Fred H. Osborne; Robert S. Tuttle, and Michael J. Corbett, all of c/o The Wurlitzer Company, North Tonawanda, N.Y.

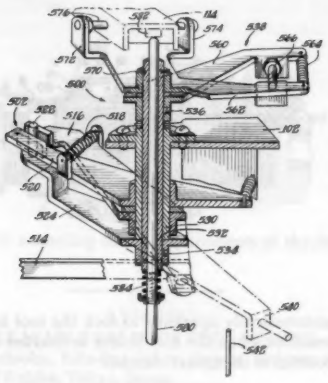
Division of Ser. No. 619,687, March 1, 1967, Pat. No. 3,501,153. This application Feb. 19, 1970, Ser. No. 14,866

Int. Cl. G11b *3/10*

U.S. Cl. 274—23 R **3 Claims**

This invention relates generally to an automatic phono-

graph, and more particularly to an automatic phonograph for



playing either side of a particular record selected from a plurality of records.

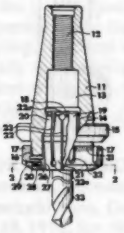
ERRATUM

For Class 277—233 see:
Patent No. 3,734,514

3,734,513
STRAIGHT CHUCK

Hiromu Kanebako, and Kazutoshi Wada, both of Kimatsugun, Chiba, Japan, assignors to Kuroda Seiko Company, Ltd., Ota-ku, Tokyo, Japan

Filed May 21, 1971, Ser. No. 145,854
Claims priority, application Japan, June 4, 1970, 45/54442
Int. Cl. B23b *31/20*
U.S. Cl. 279—48 **2 Claims**



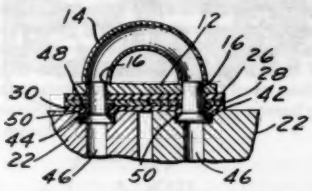
This invention relates to a straight chuck of collet type setting in vertical machine tools to use. Revolving a collar along the direction of removal of it, the collet retained within the body portion of the straight chuck and fastened or clamped the external periphery can be loosed and a tool may be removed.

During the revolution of the collar and the loosening of the collet, an upper inclined surface of the collet only in the beginning is disengaged from an opposite and corresponding inclined surface of the body of the straight chuck, without loosening of a shank instantly and throughly, then the collet is prevent from dropping, finally a cramp ring is disengaged from the lower inclined surface so as to loose the tool. From beginning to end, the collet of the straight chuck in accordance with the invention has a sufficient and constant cramp force to prevent the tool from loosing and dropping.

3,734,514
CROSS-OVER SEALING MEANS

Preston W. Anderson, 10243 Sherrill St., Whittier, Calif.

Filed June 28, 1971, Ser. No. 157,340
Int. Cl. F16j *15/06*
U.S. Cl. 277—233 **6 Claims**



Sealing means for cross-over fuel line connections for internal fuel lines in cylinder heads of deisel engines having a plurality of such heads. The internal fuel lines terminate in recesses adjacent the adjacent edges of such heads and there is a plate with cross-over tubes which communicate with such recesses.

The sealing means includes a lower neoprene gasket, a high-pressure, rigid asbestos gasket and, on top of this asbestos gasket, there is an upper neoprene gasket which is at the underside of the plate. There is a cone for each end of each cross-over tube and each cone has a shank extending from an outwardly-flared base. The shank tapers from the small end of the base and the outside diameter of the small end of each shank is smaller than the inside diameter of the cross-over tubes, while the outside diameter of the larger end of the shank is greater than the inside diameter of said tubes. The neoprene and asbestos gaskets have aligned holes therethrough for reception of the shanks of the cones, the shanks of said cones being pressed into the ends of the cross-over tubes so that such shanks have sealing connections with said tubes.

On the shanks and between the asbestos gasket and the lower neoprene gasket are flat, resilient, washer-like pressure elements fitting snugly on the cones at the junction of the shanks and the respective bases. The bases have small flanges extending radially from their free ends and said flanges are adapted to fit closely into the recesses in the cylinder heads. A second washer-like resilient seal is disposed on each cone below the lower neoprene gasket, said second seal resting on the base of the cone.

There are screws extending through openings provided therefor in the gaskets for securing the assembly to the adjacent edges of the adjacent cylinder heads, and when said screws are tightened the gaskets and cones are tightened to effect a secure seal. Further, when the screws are tightened the pressure elements are forced downwardly to force edge portions of the lower neoprene gasket sealingly onto the upper free edges of the recesses and sealingly onto the smaller end portion of the base. The second washer-like resilient seals are pressed tightly onto the respective bases, substantially filling the space between the bases of the cones and the adjacent cylindrical recess walls, thereby providing an additional seal for the cross-over sealing means.

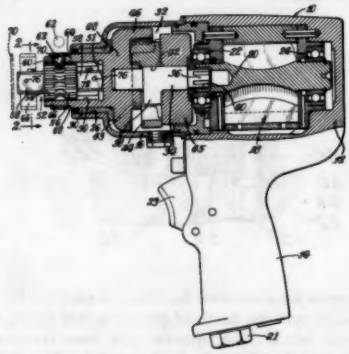
3,734,515
POWER WRENCH WITH INTERCHANGEABLE ADAPTERS

Edmund C. Dudek, Saint Charles, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Jan. 29, 1971, Ser. No. 110,942
Int. Cl. B25b *29/00;* **F16d** *1/06*
U.S. Cl. 279—1 A **8 Claims**

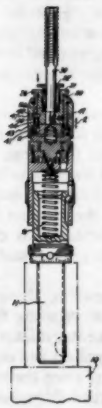
A power wrench which has a spindle is provided with interchangeable adapters having drive portions of various sizes

for connecting a socket or the like to the wrench. The adapters can be easily installed and removed from the spindle, but tampering with the wrench is minimized, since upon inspection it is not apparent that the adapter is easily removable



from the spindle. Further, the adapter can be provided with two drive portions, one at each end. Should one portion be broken, the adapter can be reversed in the spindle, and the second drive portion can be used.

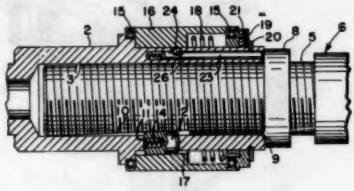
3,734,516
CHUCK ASSEMBLY FOR TOOL HOLDERS
Theodore M. Smith, 14750 Puritan Avenue, Detroit, Mich.
Filed June 14, 1971, Ser. No. 152,907
Int. Cl. B23b *31/04, 31/22*
U.S. Cl. 279—75 **3 Claims**



A tool holder comprising a chuck locking sleeve, an adapter, and a bushing, wherein the adapter is locked to the sleeve against axial as well as rotatable displacement relatively by a ball grip means which serves not only for gripping the parts together against axial displacement but also for establishing a drive connection between the sleeve and the adapter.

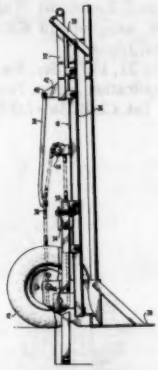
3,734,517
QUICK CHANGE TOOL HOLDER
Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio
Filed Feb. 25, 1971, Ser. No. 118,603
Int. Cl. B23b *31/04*
U.S. Cl. 279—81 **14 Claims**

A quick change tool holder characterized in that a socket member secured to a machine tool spindle or formed as a part thereof has a bore in which the shank of a tool holder is nonrotatably telescoped and in that the socket member has lock



means automatically operative to lock the tool holder in the socket member when the tool holder is inserted to predetermined position in the socket member.

3,734,518
STAIR CART
Niles E. Sawmiller, 415½ S. West Street, Lima, Ohio; Gary C. Clymer, 202 Elm Street, and Larry R. Clymer, 214 North Broadway, both of Columbus, Ohio
Filed Nov. 12, 1971, Ser. No. 198,183
Int. Cl. B62b *5/02*
U.S. Cl. 280—5.3 **5 Claims**

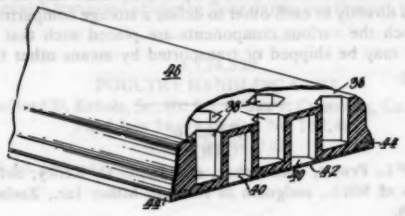


A hand truck is provided with a push bar lift assembly for carrying loads vertically up stairs. A U-shaped push bar is positioned between the wheels and lower support frame to provide a downward force against the stairs. A chain and sprocket assembly is connected to the frame through an offset axle and a sliding handle. The operator pulls the handle in the same direction that he desires the load to be moved to effectuate the lifting station.

3,734,519
MOLDED SKI
William N. Bennett, 69 Rollingwood Lane, West Concord, Mass.
Filed Oct. 23, 1970, Ser. No. 83,345
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 R **2 Claims**

A one-shot molded ski having cored recesses at a right angle

to the general plane of the ski, said recesses being arranged



where desired according to the requirements of the design of the ski.

3,734,520

RELEASABLE SKI BOOT HEEL BINDING

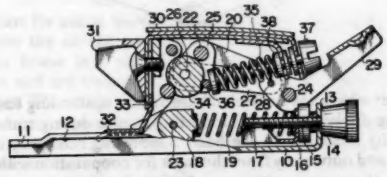
Noliyasu Hashioka, Kita-ku, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1971, Ser. No. 143,145

Claims priority, application Japan, May 23, 1970, 45/44231

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **7 Claims**



In a releasable ski boot heel binding comprising a base to be attached to a ski, a casing having a boot heel engaging member at its front end, and a supporting member mounted to the base and pivotably connecting the casing, a cam member is swingably connected to the front portion of the supporting member. The cam member is urged and press-fitted to a transverse pin, which is connected to the front portion of the casing, by a depressing spring. The cam member has a dented portion in which normally the transverse pin engages and a protruded portion against which the transverse pin acts to force back the cam member.

3,734,521

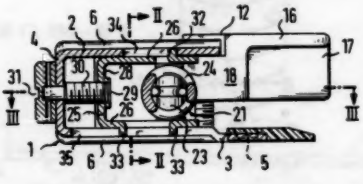
TOE IRON FOR SAFETY SKI BINDINGS

Bernd Payrhammer, Farchant, Germany, assignor to Hannes, Marker, Garmisch-Partenkirchen, Germany

Filed July 20, 1971, Ser. No. 164,409

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **15 Claims**



The toe iron is suitable for downhill and cross-country runs and comprises two carrying levers, which are pivoted on vertical pivots to a toe iron member that is fixed to the ski. At their free ends, the carrying levers carry respective soleholders. In their normal position, the carrying levers are pulled by a spring against a stop, which is fixed to the ski. The spring is connected at its ends to the carrying levers for a movement toward the tip of the ski. The carrying levers are adapted to be swung out against the force of the ski. A locking member is held on a toe iron member that is fixed to the ski. The locking member indirectly or directly forms a guideway for each end of the spring and prevents a movement toward the tip of the ski of that end of the spring which is associated with the carrying lever performing a pivotal movement at a time until the carrying levers have performed a pivotal movement through a predetermined angle, whereas the other end of the spring, which is associated with the carrying lever performing no pivotal movement at a time, is held in its normal position by the locking member.

3,734,522

APPARATUS AND METHOD FOR COMPENSATING FOR THE LONGITUDINAL MOVEMENT OF A SAFETY SKI BINDING

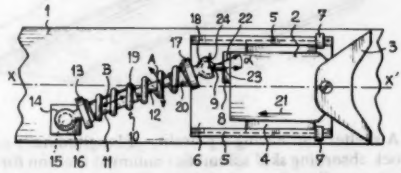
Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Annecy-Haute-Savoie, France

Filed Jan. 18, 1971, Ser. No. 107,254

Claims priority, application France, Jan. 19, 1970, 7001826

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **15 Claims**



The disclosure herein describes an apparatus and method for compensating for the longitudinal movement of a safety ski binding and thereby protecting the skier when falling. To achieve this aim, the moving part of the ski binding is subjected to the action of a resilient force which resists the displacement of the moving part in one direction; this resilient force varies as a function of the moving part and, at the same time it varies, the component of this force which acts on the moving part of the binding parallel with the direction of movement thereof, is maintained at an appreciably constant value.

3,734,523

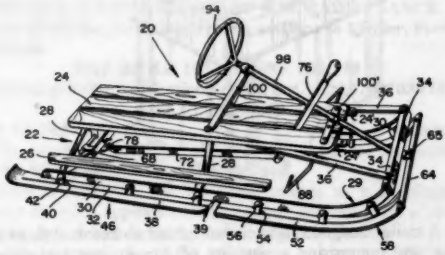
SLALOM SLED

Lars Field, P.O. Box 344, Fishers Island, N.Y.

Filed Sept. 11, 1970, Ser. No. 71,516

Int. Cl. B62b 13/04

U.S. Cl. 280—16 **5 Claims**



A sled including a platform body mounted on a chassis having parallel spaced runners. The sled is provided with a steer-

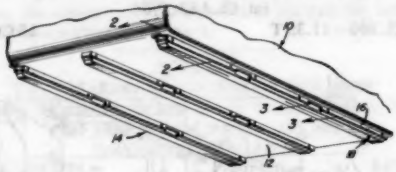
ing mechanism incorporating a rack and pinion drive for displacing the runners laterally to the path of travel for directional control. A brake system is also incorporated into the sled and is optionally operated by a hand lever or a foot lever mechanically linked to a brake member, the latter being adapted to contact the terrain surface and thereby retard the movement of the sled. The runners are suitable for traversing ice covered surfaces and other surface traversing means such as snow skis may be selectively attached to the runners for specific surfaces. The runners and skis have a curved design with a longitudinal keel and dependent parallel edges so as to reduce frictional drag and to improve the lateral stability of the sled.

3,734,524

SHOCK SKID ASSEMBLIES FOR SHELTER UNITS

William E. Ciccarelli, and Phillip A. Kaufman, both of York, Pa., assignors to Gichner Mobile Systems, Inc., Dallastown, Pa.

Filed Feb. 17, 1971, Ser. No. 116,135
Int. Cl. B62b *17/04*
U.S. Cl. 280—25 **10 Claims**



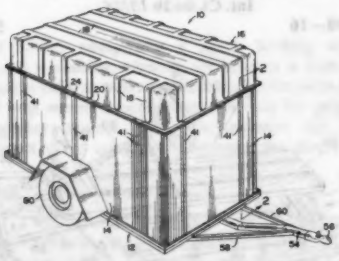
A shelter unit having a plurality of longitudinally extending shock absorbing skid assemblies mounted thereon for protecting internally mounted delicate equipment from excessive shock such as may occur when the shelter unit experiences rough handling during transport or deployment which frequently is by helicopter drop. Each shock absorbing skid assembly employs relatively movable channel-shaped members spaced apart by a plurality of cylindrical shock absorbing elements.

3,734,525

COLLAPSIBLE TRAILER

Donald H. Rimbey, Temple Terrace, Fla., assignor to Helen A. Shook, Tampa, Fla.

Filed May 13, 1971, Ser. No. 143,009
Int. Cl. B60p *3/34*
U.S. Cl. 280—30 **11 Claims**



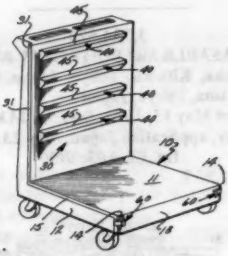
A trailer designed to be towed behind an automobile or the like and comprising a plurality of components including a base, side wall means surrounding the base, a top, a tow bar and a pair of spring loaded axis. The majority of the components which comprise the trailer are removably attached to the base or to one another such that each of the components may be disconnected from their assembled position and stored on the base of the trailer. The top and the base may be connected directly to each other to define a storage compartment in which the various components are placed such that the trailer may be shipped or transported by means other than towing.

3,734,526

CART

Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, both of Mich., assignors to Herman Miller Inc., Zeeland, Mich.

Filed Nov. 5, 1970, Ser. No. 87,144
Int. Cl. B62b *3/02*
U.S. Cl. 280—33.99 T **19 Claims**



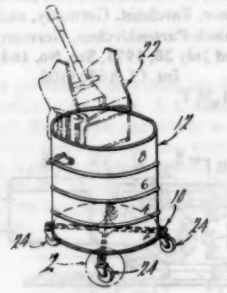
A cart which has a wheeled base and an upstanding back for carrying drawer and tray supporting frames during transport, integrally molded with the base. Supporting rails project upwardly and outwardly from the back for cooperation with hangers on the drawer supporting frames. Resilient bumpers are provided at each front corner of the base and include forwardly projecting tabs which cooperate with rearwardly projecting flanges at the rear of another cart whereby the carts can be transported in ganged fashion. The backs also include rearwardly and downwardly projecting hanger flanges such that one cart can be hung on the rail of another.

3,734,527

BUCKET CHASSIS

Douglas C. Bard, Muskegon, Mich., assignor to Beatrice Foods Co., Chicago, Ill.

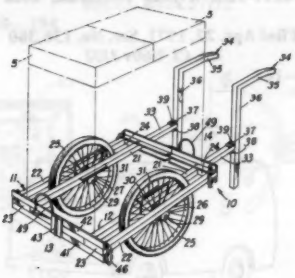
Filed Feb. 4, 1971, Ser. No. 112,618
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.1 **1 Claim**



A chassis for movably supporting a generally cylindrically-shaped container, pail, bucket or the like, the chassis being of a one-piece molded plastic construction and comprising a plurality of integrally connected generally coplanar arranged outwardly projecting arm sections adapted to support the con-

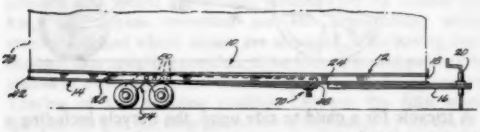
tainer thereon, and means on the outer end of each of the arm sections adapted for operative connection to a rollable castor, wheel or the like, whereby the container may be rolled or otherwise traversed along the floor during use thereof.

3,734,528
POULTRY HANDLING CART
Thedford D. Echols, Jr., Rt. No. 6, Box 9, Cumming, Ga.
Filed July 14, 1971, Ser. No. 162,481
Int. Cl. B02b *11/00*
U.S. Cl. 280—42 **4 Claims**



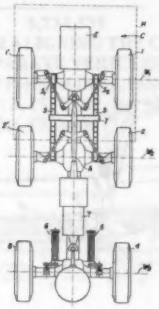
A cart for use in the placement of chicks in a broiler house wherein the chicks are delivered from the hatchery to the broiler house in a plurality of trays by a transport vehicle means and are transferred into the broiler house by utilizing the cart. The chick placement cart is movable between an extended tray supporting position and a collapsed position and includes a first and second wheel assembly having frame support means associated with each of the wheel assemblies, with the two wheel assemblies being connected to each other by a pair of pivotally collapsible frame assemblies. The wheel assemblies and connectible frame assemblies are detailed for providing a supporting surface for supporting and maintaining a plurality of chick carrying trays thereon when in the extended tray supporting position. The connectible frame means for attaching the two wheel assemblies to each other includes a number of pivotally connected frame elements having openings therein adapted to be moved into alignment with openings on wheel assembly frame members, with connecting pins adapted to be inserted through the aligned openings for maintaining the cart in an extended tray carrying position. The connecting pins include attachment means for maintaining the pins in position relative to the cart, with the pin attachment means detailed in length for allowing the pins to be inserted through alternate holes when the cart is moved to a collapsed position, whereby the pin and pin attachment means are operable for maintaining the cart in a collapsed position.

3,734,529
TRAILER FRAME
James R. Selby, 1028 East F, Casper, Wyo.
Filed Mar. 25, 1971, Ser. No. 127,957
Int. Cl. B62d *53/06*
U.S. Cl. 280—80 B **6 Claims**



A trailer frame structure is provided for mobile homes and consists of an outer, generally rectangular, frame having at its front end coupling means for attaching the trailer to a vehicle and an inner, generally rectangular, frame which is pivotally mounted intermediate its ends between the outer frame adjacent the rear end thereof whereby the inner frame is capable of pivoting about a generally horizontal axis. A wheel bogie is attached to one of the frames adjacent the pivot axis; the rear end of the inner frame extends beyond the rear end of the outer frame so that the front end of the inner frame will intersect the outer frame at a point intermediate the outer frames ends; adjustable abutment elements are provided on the forward end of the inner frame for contacting the underside of the outer frame when the inner frame pivots about its axis in response to the weight of a load on the rear end of the inner frame.

3,734,530
VEHICLE SUSPENSIONS
Vladimir Popelar, Prague, and Oldrich Ryc, Pribor, both of Czechoslovakia, assignors to TATRA, Narodni Podnik Koprivnice, Czechoslovakia
Filed Dec. 29, 1970, Ser. No. 102,425
Claims priority, application Czechoslovakia, Dec. 30, 1969, 8620/69
Int. Cl. B62d *13/00*
U.S. Cl. 280—81.5 **3 Claims**



A suspension system for a vehicle having a longitudinal axis. The vehicle is provided with at least three pair of wheels, at least two of which are tandemly arranged and provided with means for steering. The tandemly arranged wheels are respectively sprung by a leaf spring parallel to the axis. Each leaf spring is located on opposite sides of the axis and nearer to the axis than to the respective wheels.

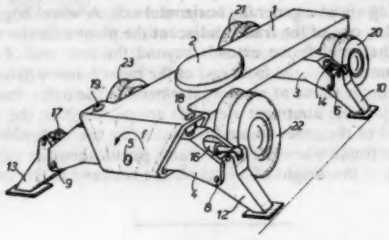
3,734,531
STABILIZING DEVICE FOR APPLIANCES FOR PUBLIC WORKS, FOR HANDLING AND FOR MAINTENANCE
Roger Metaillier, Grenoble, France, assignor to Richier, Paris, France
Filed Oct. 12, 1971, Ser. No. 188,179
Claims priority, application France, Oct. 12, 1970, 7036753
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **3 Claims**

The invention relates to the field of appliances for public works, for handling and for maintenance.

More specifically, the invention relates to a stabilizing device for such appliances which comprises two pairs of stabilizing legs driven by jacks and arranged at the front and at the rear, respectively, of the appliance. At least one of these pairs of legs is mounted on a traverse articulated, about an axis, to the chassis of the appliance which can be immobilized about its axis by suitable means, such as jacks, which also

allow one to cause it to pivot about its axis.

This device is useful for re-establishing the bearing on the



ground of one of the legs carried by the traverse in the event of cessation of this bearing.

3,734,532

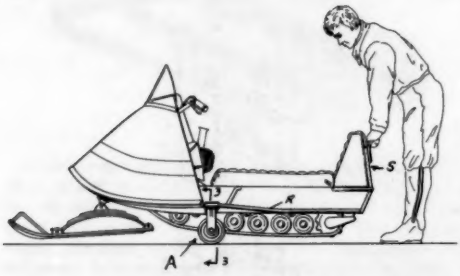
AUXILIARY WHEEL UNITS FOR THE RUNNING BOARDS OF A SNOWMOBILE

Martin L. Mattson, 10 Drake Road, Duluth, Minn.

Filed July 21, 1971, Ser. No. 164,678

Int. Cl. B60s 9/00

U.S. Cl. 280—150 A **2 Claims**



Auxiliary wheel units for application to the running boards of a snowmobile having upturned rims at their outer edges, said units each including a wheel, a body underlying the running board of the snowmobile with legs depending therefrom and straddling the wheel, an axle extending across the legs at their lower ends and journaling the wheel for rotation, the wheels engaging the ground at a locality below the ground engaging structure of the snowmobile and a hook at the outer end of the body for holding the unit detachably secured to the running board of the snowmobile.

3,734,533

MOTOR VEHICLE SAFETY DEVICE

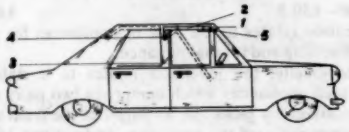
Franz Lang, 31 Simmonds Street, Johannesburg, Transvaal Province, South Africa

Filed Apr. 9, 1971, Ser. No. 132,652

Claims priority, application South Africa, Apr. 23, 1970, 700886

Int. Cl. B60r 21/02

U.S. Cl. 280—150 B **13 Claims**



A motor vehicle having seats therein and a ceiling over the seats and including a safety device comprising a transverse elongated member mounted on supports therefor and adapted to move downwards in front of occupants of a seat in the motor vehicle, the elongated member being releasably held adjacent the ceiling of the vehicle by means of a latch adapted to release the elongated member during abnormally fast decelerations of the vehicle to prevent persons in the car from falling forwardly beyond the elongated member.

3,734,534

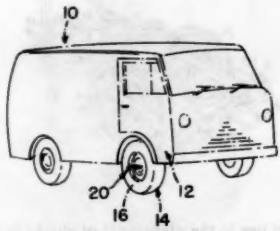
MOUNTING STEP FOR AUTOMOTIVE VEHICLE

Paul Brooks, Jr., 621 Northeast 78th Street, and Clarence O. Teeters, 10211-12th Avenue Northeast, both of Seattle, Wash.

Filed Apr. 22, 1971, Ser. No. 136,380

Int. Cl. B60v 3/02

U.S. Cl. 280—163 **11 Claims**



In a automotive vehicle having an access door above a front wheel, a removable step assembly located at the center of a front wheel and mounted to the front spindle of the automobile. There is a first mounting member comprising an extension nut which is threaded onto and locked to the front spindle. At the outer end of the extension nut is a hexagonal locking head connected by a neck portion of reduced diameter. The removable step has at its inner end a locking member comprising a pair of downwardly extending arms which reach around the neck of the extension nut, and is formed with a locking recess which mates with the locking head. A spring member mounted to the step adjacent the two locking arms holds the step in place and prevents any rattling of the step. A locking tab secures the extension nut to the automobile's front spindle.

3,734,535

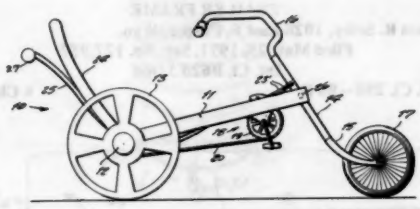
TRICYCLE HAVING DRIVING ENERGY STORING ARRANGEMENT

Donald M. Sidlauskas, 3950 N.W. 32nd Terrace, Fort Lauderdale, Fla.

Filed Aug. 11, 1971, Ser. No. 170,897

Int. Cl. B62m 1/10

U.S. Cl. 280—215 **1 Claim**



A tricycle for a child to ride upon, the tricycle including a frame supported at its rear end upon a pair of rear wheels mounted on a rear axle, the front end of the frame being supported upon a steering column supported upon a single front wheel, the steering wheel being controlled in direction by han-

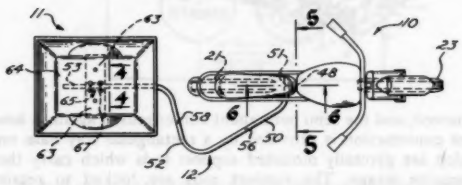
dle bars, the device including foot pedals for winding up a pair of springs for giving driving power to the rear wheels, and the handle bars when pushed forwardly acting as a level for a set of brakes.

3,734,536

TOW BAR MEANS

James A. Dever, Bay Village; Harry D. Tenan, and George R. Finley, both of Cleveland, all of Ohio, assignors to The Green Ball Bearing Company, Cleveland, Ohio

Filed Aug. 17, 1970, Ser. No. 64,178
Int. Cl. B62k 27/12
U.S. Cl. 280—204 5 Claims



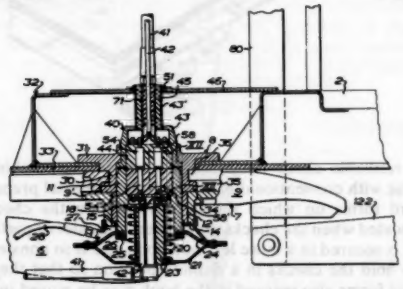
A formed tow bar for trailering utility carts behind two-wheel cycles adapted to be operatively attached to the lowermost cycle frame member disposed below the axis of the wheels and forward of the rear cycle wheel and further adapted to be secured to the utility trailer whereby the formed two-bar is maintained substantially horizontal to the ground during trailering.

3,734,537

MECHANISMS FOR COUPLING SEMI-TRAILERS TO TRACTORS

Roland Bengt Holmberg, Kalmar, and Ralf Krister Ebbe Petersson, Alsterbro, both of Sweden, assignors to Kalmar Verkstadsaktienbolag, Kalmar, Sweden

Filed Aug. 12, 1970, Ser. No. 63,174
Claims priority, application Sweden, Aug. 13, 1969, 11244/69
Int. Cl. B62d 53/08
U.S. Cl. 280—421 5 Claims



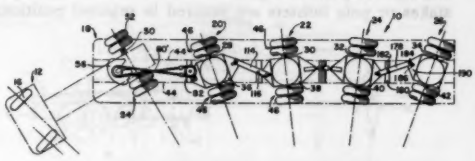
A mechanism for coupling a semi-trailer to a tractor comprises a fifth wheel mechanism mounted on the tractor and king pin means mounted on the semi-trailer, which mechanism and which means are arranged, after having been brought into coupling position, to be locked in said position by means of a locking device which is operated by fluid pressure. Tracing of the coupling position between the fifth wheel mechanism and the king pin means is facilitated by means of a device which serves to raise and lower the fifth wheel mechanism and which is of the type that can be used to advantage as a spring for the spring suspension of the front end of the semi-trailer during driving.

3,734,538

STEERING ASSEMBLY FOR TRAILERS

Carl E. Humes, 907 Franklin Avenue, Steubenville, Ohio

Continuation-in-part of Ser. No. 135,243, April 19, 1971, Pat. No. 3,689,107.
Filed Feb. 7, 1972, Ser. No. 223,877
Int. Cl. B62d 53/06
U.S. Cl. 280—426 3 Claims



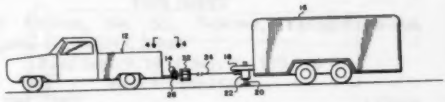
Steering mechanism for a tractor driven multiple wheeled trailer wherein the motive force for steering a plurality of wheeled axle assemblies of the trailer is derived from the fifth wheel of the tractor in the form of flexible draft members extending from the fifth wheel to the first of the wheeled axle assemblies and thereafter each wheeled axle assembly is positively interconnected to its preceding wheeled axle assembly either for pivotal motion in the same or the reverse direction and at pre-selected amounts.

3,734,539

APPARATUS FOR ALIGNING THE COUPLING ON SEPARATE VEHICLES

Melvin I. Salmi, 13619 Pyramid Drive, Dallas, Tex.

Filed Nov. 3, 1971, Ser. No. 195,263
Int. Cl. B60d 1/14
U.S. Cl. 280—477 10 Claims



Disclosed is an indicating apparatus for attachment to a trailer or the like for use in aligning the couplings between the trailer and a towing vehicle, said apparatus being mounted on the trailer and having a spring loaded extendible and retractable guide line which releasably attaches to the rear of the towing vehicle adjacent the coupling. Sensing means are included in the apparatus for sensing deflection of the guide line in horizontal and vertical directions and for sensing the separation of the vehicles and indicator means in the vehicle to indicate said deflections and separation to the operator of the towing vehicle. Variable sensitivity means for increasing the sensitivity of the apparatus as the towing vehicle approaches the trailer and means for allowing the towing vehicle to approach the trailer from various angles are also provided.

3,734,540

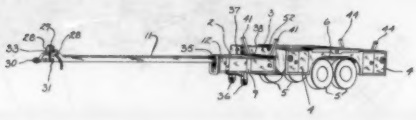
UTILITY SERVICE TRAILER

William E. Thiermann, 10726 N. Wauwatosa Road, Mequon, Wis.

Filed Apr. 5, 1971, Ser. No. 131,115
Int. Cl. B60d 1/00, 1/16
U.S. Cl. 280—482 10 Claims

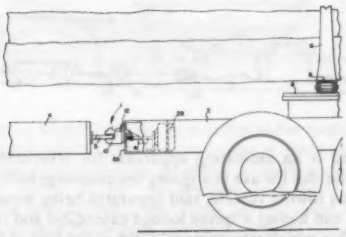
An extensible trailer tongue is telescoped beneath the floor of the trailer with a hitch on its forward end at an appropriate level for attachment to a vehicle ahead, and when extended forwardly the tongue is raised to a higher level and locked in position to clear road obstacles, with the hitch lowered relative to the tongue to again be disposed at the appropriate level for attachment to the same vehicle ahead. The tongue rides loosely between an upper and a lower track facing each other,

and has upper rollers at its rear end bearing upwardly against the upper track and lower rollers disposed forwardly of said upper rollers and supporting the rear end of the tongue on the lower tracks. Means are provided to take up the looseness between the tongue and the track at hitch locations of the tongue. The body of the trailer has a platform for supporting utility poles and equipment with adjustably positioned stakes at either end and with a triangular central pillow serving as a central stake to position logs to one side of the trailer body. Side stakes or pole bolsters are secured in selected positions by



lateral pins on one side thereof entering corresponding key slots in the side walls of the trailer with heads on the pins interlocking the stakes against displacement and with spring loaded lock bolts preventing raising of the pins out of their corresponding slots. The platform is reinforced longitudinally by upstanding cabinets along either side, by a longitudinal channel extending centrally beneath the platform and receiving the tongue, and by diagonal compartments on either side of the channel. Cross beams are provided at the ends and beneath the platform.

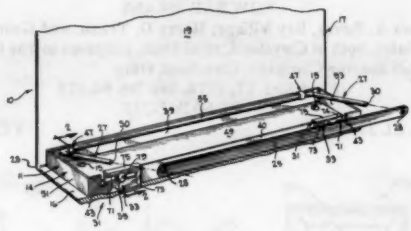
3,734,541
AIR ACTUATED TRUCK-TRAILER HITCH
Elvin O. Burroughs, Route 2, Box 207, Dexter, Oreg.
Filed Aug. 16, 1971, Ser. No. 171,861
Int. Cl. B60d *7/00*
U.S. Cl. 280—506 **8 Claims**



A hitch for a truck and trailer with the locking member of the hitch adapted for opening and closing of the hitch by travel along a horizontal, rectilinear path. The locking member is moved to a closed position by an air pressurized booster unit. Movement is imparted to the locking member via a booster actuated assembly which additionally functions to move a pressure block of the hitch into engagement with the eye member carried by the trailer. The eye is thereby restrained against undesired movement while in engagement with the post of the hitch. Adjustable means enable the pressure block-eye engagement to be set to achieve the aforementioned result while avoiding restricting rotational movement of the eye. A mechanical lock automatically locks the locking member in a closed position.

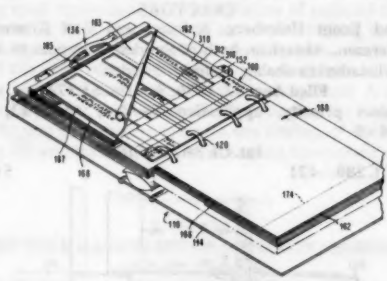
3,734,542
BINDER
Charles A. Nesmith, Jr., c/o Stoppenbeck Book-Bindery, Box 656, Bloomington, Ill.
Filed Apr. 26, 1971, Ser. No. 137,417
Int. Cl. B42d *3/00*
U.S. Cl. 281—47 **4 Claims**

A semi permanent magazine binding device is provided for attachment to a binder cover for retaining in sequence periodicals such as magazines and for locking the same against removal or loss from the binder. By means of a special key or tool the semi permanent binder may be unlocked and magazine straps may be removed from a magazine retaining position to a release position at which the periodicals may be



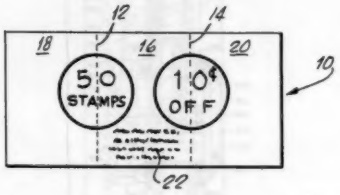
removed; and the semi permanent binder reused again. A low cost construction is provided by a rectangular tray base on which are pivotally mounted support rods which carry the magazine straps. The support rods are locked to retain magazine straps by a locking slide means carried on a wall of the tray base.

3,734,543
COMBINED CHECK AND RECORD-KEEPING BOOK
Marion Donovan, 418 Harbor Road, Southport, Conn.
Division of Ser. No. 782,202, Dec. 9, 1968, Pat. No. 3,620,553.
This application Dec. 16, 1970, Ser. No. 98,666
Int. Cl. B41l *1/20, 3/00*; B42d *15/00*
U.S. Cl. 282—23 R **7 Claims**



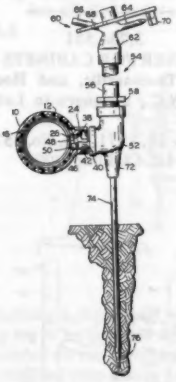
A refillable check book and record-keeping combination for use with conventional bank checks and special preprinted record forms on which the data written on the checks is duplicated when the checks are written. A holder of particular form is secured in a loose leaf notebook and is so constructed as to hold the checks in a definite position so that they and record forms also secured in the book may be moved into registry and held in registry while the checks are being written. The record forms each include a permanent record sheet, preferably with detachable sheets for forming non-negotiable duplicate copies of individual checks, and the permanent record sheets also provide spaces for entry of deposits and other information relating to the bank account all arranged to facilitate accurate balancing and reconciling of the account. Certain of the modifications disclosed provide a storage pocket on the permanent record sheet for related papers such as deposit slips. Further modifications include simplified versions of the check books for pocket use in which preprinted record forms are so attached to the book that they are readily movable into registry with the checks for making duplicates as the checks are written.

3,734,544
DUAL VALUE DOCUMENT
Bruce I. Fishkin, West Redding, Conn., and John J. Taylor, Roslyn, N.Y., assignors to Sperry & Hutchinson Company, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,506
Int. Cl. G09f 3/00
U.S. Cl. 283—56 2 Claims



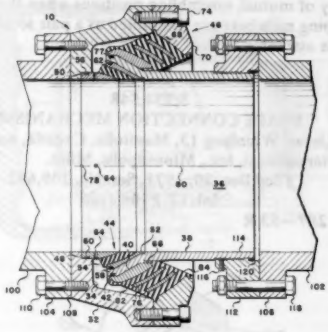
A dual value document includes a sheet of flexible material such as paper divided into a middle section and at least two connected and detachable end sections. The middle section contains printed matter to indicate that a document consisting of the middle section and one of the end sections has one value, while a document consisting of the middle section and the other of the end sections has a different value.

3,734,545
IRRIGATION CONNECTION
William A. Stout, Portland, Oreg., assignor to Portca Corporation, Portland, Oreg.
Filed Nov. 5, 1970, Ser. No. 87,250
Int. Cl. F16l 55/00
U.S. Cl. 285—5 11 Claims



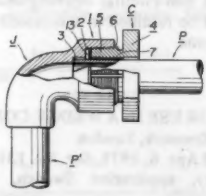
A connection for irrigation pipes includes a bell member and a spigot member slidably receivable within the bell member and having an elongated aperture partly registrable with an aperture in the side of the bell member. A cantilever support for the connection comprises a horizontal conduit received through the two apertures and forming a bayonet joint with a tubular extension at the side of the bell member. The cantilever support includes a post for mounting the conduit and for additionally supporting fluid distribution means coupled to receive fluid from the aforementioned conduit.

3,734,546
FLEXIBLE PIPE CONNECTION
John T. Herbert; Paul E. Sullivan, and Stanley P. Vitt, Jr., all of Redlands, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 30, 1972, Ser. No. 239,515
Int. Cl. F16l 27/10
U.S. Cl. 285—49 4 Claims



A flexible pipe connection configured to prevent the transmission of sounds produced in the pipeline. The joint has an annular housing and a nipple member partially submerged in the housing. The housing and nipple are connected by two elastomeric seal assemblies which provide flexibility and sound isolation between the housing and the nipple member.

3,734,547
CLAMPING DEVICE BY SEGMENTAL THREAD PIPE FOR JOINT
Noriatsu Kojima, No. 31, 5-chome, Yanagishima-cho, Nakagawa-ku, Nagoya, Japan
Filed Sept. 9, 1971, Ser. No. 179,119
Int. Cl. F16l 19/00
U.S. Cl. 285—357 1 Claim



A clamping device for coupling and securing firmly a pipe to be coupled to a joint is constructed in such a way that one end or both ends of a joint member is provided with a clamping portion, and a tapered female thread is formed on the internal surface of the clamping portion along the opening edge, and a thread portion and a nut portion are integrally formed and said clamping member is formed in combination of two pieces as a pair so as to be assembled for use, and a tapered male thread is formed on the external surface of the thread portion so as to be screwed to the tapered female thread formed on the clamping portion of the joint member, and also the thread ridge having an identical pitch with that of the tapered male thread formed on the external surface of the thread portion is formed on the internal surface, and a vertical slit groove is notched on the thread portion, and when the thread portion of the clamping member is caused to be screwed into the clamping portion of the joint member, the pipe to be coupled is gradually and uniformly clamped and secured in spiral stripe so as to be firmly coupled, and an en-

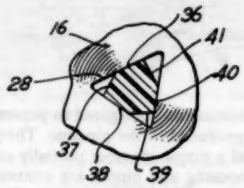
gaging step portion for engaging the tip of the pipe to be coupled is formed on the joint member and the clamping member is inserted to the pipe to be connected and when the clamping member is screwed into the clamping portion of the joint member, the pipe to be coupled is prevented from advancing ahead of a predetermined position in the joint member which is accompanied with the screwing of the clamping member, whereby the clamping member is provided with an assembling mechanism and this assembling mechanism prevents the discrepancy of mutual assembling positions when the two pieces of clamping members are assembled as a pair so as to obtain a complete assembly thereof.

3,734,548

SHAFT CONNECTION MECHANISM

Garry Kieves, Winnipeg 13, Manitoba, Canada, assignor to K-Tel International, Inc., Minneapolis, Minn.

Filed Dec. 20, 1971, Ser. No. 209,692
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R **7 Claims**



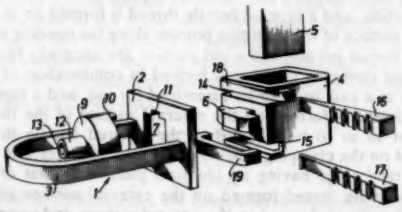
Shaft connection mechanism for drivingly securing a device to a shaft in an appliance. The shaft is provided with a recessed portion adjacent an end. The end of the shaft has a non-circular configuration and the device has a non-circular opening adapted to pass over the shaft end and be retained in the recessed portion upon relative rotation between the device and the shaft. Camming means are provided in the recessed portion for drivingly engaging the device and the shaft upon relative rotation in one direction, and for effecting ready release of the device from the shaft upon rotation in an opposite direction. In a modification, the device may be non-rotatably mounted on the shaft and retained in place by a lock member having a non-circular opening adapted to passover the shaft end and be retained in a recessed portion provided with camming means.

3,734,549

WEDGE FOR USE IN A WEDGE CONNECTION

Nils Gosta Loov, Ersmark, Sweden

Filed Apr. 6, 1971, Ser. No. 131,608
Claims priority, application Sweden, Apr. 23, 1970, 5660/70
Int. Cl. F16b 7/00
U.S. Cl. 287—20.92 G **3 Claims**



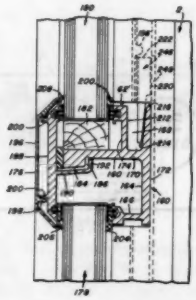
This invention relates to a wedge member that has a series of projections and recesses which make it possible to observe when the wedge has been driven in sufficiently far to establish the required rigidity of the wedge connection.

3,734,550

BUILDING CONSTRUCTION ASSEMBLY

Lawrence B. Vance, Pittsburgh, Pa., assignor to Engineered Products, Inc., Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,082
Int. Cl. E04b 2/88
U.S. Cl. 287—189.36 A **12 Claims**



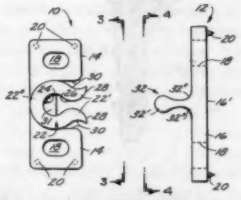
A building construction assembly including a first elongated structural member having a longitudinally disposed keyway having a base wall and a pair of sidewalls projecting from the base wall. Means providing an elongated restricted throat keyway opening. A second elongated structural member having a longitudinal axis disposed generally transversely with respect to the longitudinal axis of the first elongated structural member. The second elongated structural member having a locking channel having a bottom wall, a front wall and a rear wall. The second elongated structural member disposed with its locking channel in aligned relationship with respect to an end opening of the keyway. A locking key having a first portion extending into the keyway and a second portion extending into and in engagement with the locking channel. Means resisting undesired movement of the key into the keyway sufficiently far to permit removal of the second key portion from the locking channel. A condensate gutter element may be secured within the locking channel.

3,734,551

CLOSURE-FASTENER FOR CABINETS OR THE LIKE

Robert T. Hughes, Thomasville, and Houston L. Adams, Hickory, both of N.C., assignors to Latch Plastics, Inc., Hickory, N.C.

Filed June 28, 1971, Ser. No. 157,289
Int. Cl. E05c 7/00
U.S. Cl. 292—17 **10 Claims**



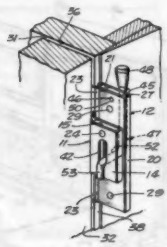
The catch and strike components of the fastener are each unitarily formed, as by a molding operation, from polypropylene or other suitable plastic material to economically produce a low-cost fastener which may be quickly and easily installed, and which is relatively silent and quite durable and reliable in operation. The fastener self-compensates for minor misalignments, and may be employed to produce gripping forces of varying magnitude.

3,734,552

HOUSE DOOR LATCHING DEVICE

Claude S. Haxton, 10316 Cord Avenue, Downey, Calif.

Filed Jan. 14, 1972, Ser. No. 217,803
Int. Cl. E05c 5/00, 19/08
U.S. Cl. 292—67 8 Claims



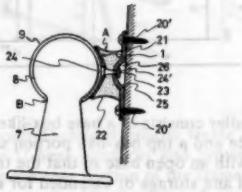
A latching device is disclosed comprising a pair of brackets having their inner portions mounted in a door gap with the inner portion of one attached to the door and the inner portion of the other attached to the door frame in opposing relationship. The brackets are each formed of a thin sheet of steel and their inner portions are designed so that they can interfit in a common plane within the door gap so as to require a minimum of clearance and thus eliminate the need for mortising either the door or the door frame in order to install the latching device. The outer portion of each of the brackets is formed by bending the thin sheet of steel back on itself to provide a channel for receiving a strip of steel which serves to reinforce the outer portion. Each of the outer portions of the brackets is provided with a suitable slot for receiving the lower end of a latch pin which is loosely held by its upper end on one of the brackets.

3,734,553

STOPPER FOR HOLDING A DOOR OPEN

Tsunesaburo Sugasawara, Chiyoda-ku, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 179,637
Int. Cl. E05c 19/16
U.S. Cl. 292—251.5 5 Claims



A stopper for holding a door open which has a male part having a mounting leg to be installed onto a floor and a magnetic absorber provided on the peripheral edge thereof, and a female part to be installed onto a door having a magnetic concave absorber for the peripheral edge of the male part. Thus, the opened door is kept open without any difficulty.

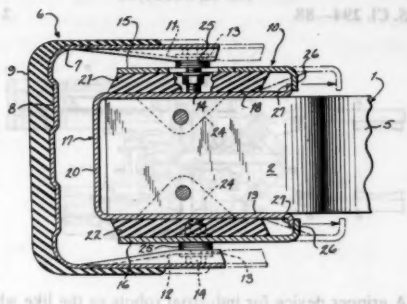
3,734,554

LOW IMPACT PROTECTION SYSTEM FOR VEHICLES

Carl W. Schwabenlender, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Feb. 22, 1971, Ser. No. 117,469
Int. Cl. B60r 19/06
U.S. Cl. 293—88 3 Claims

An impact absorbing system includes a bumper having a resilient coating, and shear mounts between the bumper and the vehicle frame side bars. The ends of the side bars are strengthened and are offset outwardly from the wheel wells to near the ends of the bumpers where the shear mounts connect the bumper to the frame. Each shear mount includes an upper and lower bracket fixed to the bumper and bonded to resilient blocks supported on an inner bracket which is bolted to the frame side bar. A rim on the inner bracket and corresponding flanges on the upper and lower brackets abut to hold the resilient blocks in a normally stressed condition.



ERRATUM

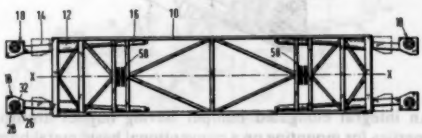
For Class 293—71 see:
Patent No. 3,734,557

3,734,555

CONVERTIBLE CARRIER FRAME FOR SHIPPING CONTAINERS

Hans Tax, Potsdamer Str. 3, and Rudiger Franke, both of Munich, Germany, assignors to said Tax, by said Franke, Munich, Germany

Filed Aug. 12, 1971, Ser. No. 171,196
Claims priority, application Germany, Aug. 26, 1970, P 20 42 357.8
Int. Cl. B66c 1/10
U.S. Cl. 294—81 SF 14 Claims



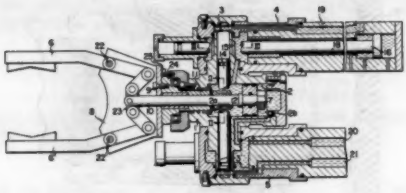
The container carrier on a crane for transferring containers toward and from containerships and the like has an elongated rectangular frame from whose corners two pairs of arms project longitudinally of the frame, the arms of each pair being inclined relative to each other at a small acute angle, their free ends carrying couplings for securing a container to the frame, and hydraulic motors moving the arms longitudinally in tubular guides fixed on the frame so that the arms may be adjusted for containers differing both in length and width. To accommodate the different containers, the couplings have interchangeable and/or convertible container engaging elements.

3,734,556

GRIPPER DEVICE FOR INDUSTRIAL ROBOTS OR THE LIKE

Hiroshi Misawa, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusko, Tokyo, Japan

Filed July 7, 1971, Ser. No. 160,395
Int. Cl. B66c *1/00*
U.S. Cl. 294—88 **2 Claims**



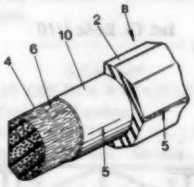
A gripper device for industrial robots or the like which includes a sleeve connected integrally with a support member for gripping arms and through which a piston rod for moving said arms towards and away is slidably disposed, said sleeve being formed with a pinion at the inner end thereof, and a cross-shaped cylinder having two cylinder portions, each having a respective axis disposed at a right angle relative to each other and spaced in the vertical direction, one of said cylinder portions receiving a spool formed with a rack engageable with said pinion therein and the other receiving a piston for moving said gripping arms towards and away therein, said cylinder portion receiving the spool being rotatably carried by base members and connected with a rotary mechanism.

3,734,557

ELASTOMERIC BUMPER

Ross A. McKenzie, Toronto 3, Ontario, Canada, assignor to National Rubber Company Limited, Toronto, Ontario, Canada

Filed Oct. 14, 1971, Ser. No. 189,452
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 R **13 Claims**



An integral elongated bumper having impact absorption properties for mounting on a conventional basic metal bumper of an automobile comprising an overlay of elastomeric material covering a core of elastomeric material having short fibers dispersed densely and randomly throughout said core and integrally bonded to the core substance, increasing the impact resistance of said core over that of the overlay.

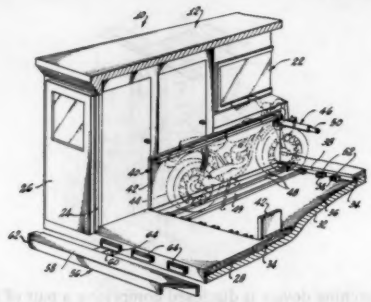
3,734,558

DUAL PURPOSE RECREATIONAL VEHICLE

Ronald B. Stead, 8351 Imperial Highway, Downey, Calif.

Filed June 21, 1971, Ser. No. 154,831
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **11 Claims**

A dual purpose recreational vehicle having a coach for use as a living quarters and a carrier for motor driven cycles and the like. The coach has an interior floor with an access opening to a cycle storage well below the floor, and removable panel means, such as hinged floor panels, which normally close the access opening to provide a floor surface across the storage well and may be raised to permit placement of one or more cycles in upright travel positions in the well. The well



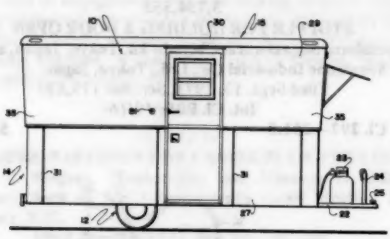
contains channels for receiving the cycle wheels and supporting the floor panels when in closed position within the access opening. The coach has a rear door opening and a removable step usable as a ramp for moving cycles into and from the coach through the door opening.

3,734,559

TELESCOPIC TRAILER

Donat Pierre Touchette, Box 250, St. Jean Baptiste, Manitoba, Canada

Filed June 10, 1971, Ser. No. 151,763
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 C **3 Claims**



The trailer consists of a base box-like portion with an open upper side and a top box-like portion slideable over the base portion with an open base so that the trailer can be collapsed for travel and storage or extended for use. A screw threaded shaft carries left and right hand threads thereon and a nut engages each of the portions of the shaft so that rotation of the shaft in one direction causes the nuts to move towards the center and in the other direction, to move towards the ends. Cables are attached to each nut, routed around pulleys and connected to the upper portion of the trailer body so that rotation of the shaft raises or lowers this portion relative to the base portion.

3,734,560

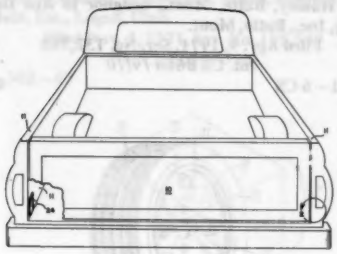
RETRACTABLE HINGE STRUCTURE FOR A TRUCK TAILGATE

Charles D. Cramblet, 894 Elm Street, Sweet Home, Oreg.

Filed May 20, 1971, Ser. No. 145,427
Int. Cl. B50j *5/10*
U.S. Cl. 296—50 **3 Claims**

Hinge structure carried by a truck engageable with the truck tailgate and retractable into the truck for disengagement

from the tailgate permitting convenient tailgate removal and re-installation. A hinge pin is spring biased outwardly into tail-



gate engagement with manual release means permitting opposite hinge pin movement during tailgate disengagement. A housing carries the hinge pin in a captive manner.

3,734,561

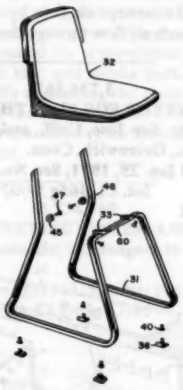
SLED BASE FRAME CHAIR

Chester J. Barecki, Grand Rapids, and Bror W. Henrikson, Wayland, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed June 3, 1971, Ser. No. 149,703

Int. Cl. A47c *3/04*

U.S. Cl. 297—239 **6 Claims**



A chair has a generally U-shaped tubular frame with the bottom portion of the U bent upwardly and provided with bracket shoes and with the rear portion of the frame forming sled runners merging into vertical back risers and, cooperating with the frame, is a one-piece plastic shell forming a seat and back provided with pockets which receive the bracket shoes of the frame front and the frame back risers to interlock the shell and chair frame.

3,734,562

AUTOMOTIVE SEATS WITH SAFETY HARNESSES

Francois Fourrey, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

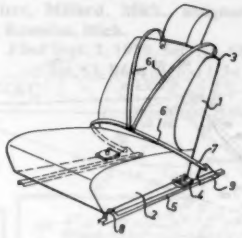
Filed June 28, 1971, Ser. No. 157,462

Claims priority, application France, Aug. 11, 1970, 7029492

Int. Cl. A62b *35/60*

U.S. Cl. 297—216 **8 Claims**

A seat provided with a safety harness, notably for automotive vehicles and of the type comprising a squab, a back provided with at least one anchor point for the shoulder-belt of said safety harness, said anchor point being located on the rear face of said back, an abdominal belt connected to said shoulder-belt, at least one kinetic energy absorption device interposed between said squab and a seat element adapted, in case of crash, to move in relation to said squab, said device being adapted, during this relative movement, to absorb one



fraction of the kinetic energy and wherein the anchor point located on said back is connected through said shoulder-belt to the abdominal belt of the safety harness, characterized in that at least one end of said abdominal belt is connected to the seat element movable in relation to the squab during a crash and that said seat element is mechanically connected to said squab in a manner known per se.

3,734,563

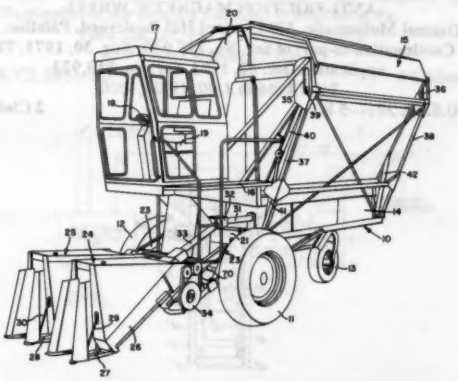
DISCHARGE MECHANISM FOR COTTON HARVESTER

Francis Edward Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 12, 1971, Ser. No. 161,836

Int. Cl. B60p *1/16*

U.S. Cl. 298—8 **4 Claims**



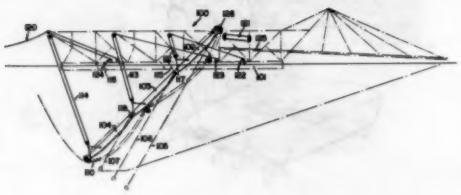
In a cotton harvester in which green bolls are collected and held in a container by a retractable bottom and the ripe bolls are collected in a basket mounted on a horizontal axis, the improvement residing in hydraulic means for shifting the bottom out of its closed position and for shifting the basket to a tilted position so that material may be discharged from the container and basket respectively. The hydraulic motors for moving the bottom as well as tilting the basket are connected in parallel so that the bottom will be retracted first to its open position and the basket will then be tilted.

3,734,564

ENDLESS BUCKET DREDGE WITH ARTICULATED LADDER AND SWELL COMPENSATOR

Cameron Edward McKay, 1632 Coronado Way, Burlingame, Calif., and George Paton Barker, Belmar, 85 Sauchenbush Road, Kirkcaldy, Fife, Scotland

Filed Apr. 27, 1970, Ser. No. 31,945
Int. Cl. E02f 3/14, 3/16, 7/06
U.S. Cl. 299—9 30 Claims



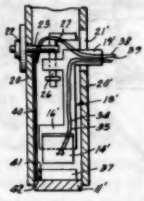
A deep-digging floating dredge having an articulated ladder with two or more sections pivoted together for relative swinging movement in a vertical plane only and a digging bucket line supported by the ladder. The dredge ladder may have a fixed uppermost section, with either the same or a different bucket line. For sea-going use the dredge may have sounding means for determining instantaneously the height of the hull above the bottom of the water on which the hull is floating, angle sensing means for determining instantaneously the angle to the horizontal of the upper movable ladder section, and control means receiving an input depth signal and an input angle signal controlling the suspension length of the articulated ladder sections and accommodating it to swells in the water level on which the hull floats.

3,734,565

ANTI-FRICTION MAGNETIC WHEEL

Dzemal Mulasmajic, 338 Pleasant Hill Boulevard, Palatine, Ill.

Continuation-in-part of Ser. No. 175,940, Aug. 30, 1971. This application Dec. 22, 1971, Ser. No. 210,923
Int. Cl. B60b 3/00, 19/00, 9/00
U.S. Cl. 301—5 R 2 Claims



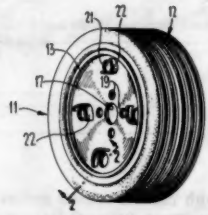
A magnetic wheel for supporting a vehicle employs a permanent magnet or an electromagnet in the shape of a ring which is journalled for rotation about a shaft. The shaft is loosely coupled to the frame of the vehicle for vertical movement by means of a member which positions a permanent magnet or an electromagnet within the ring which is poled to repel the ring. The wheel is adapted for steering by providing that the loose coupling includes a pivotal coupling and by providing a lever arm for connection to a steering mechanism, such as a rack and pinion mechanism.

3,734,566

RACING VEHICLE WHEEL HAVING IMPROVED COOLING STRUCTURE

Donald E. Hanley, Butte, Mont., assignor to Red Devil Engineering, Inc., Butte, Mont.

Filed Apr. 9, 1971, Ser. No. 132,780
Int. Cl. B60b 19/10
U.S. Cl. 301—6 CS 4 Claims



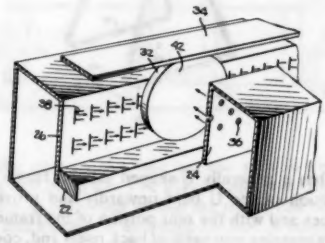
A wheel especially designed for racing vehicles is described which has an improved structure for cooling both the wheel and any brake or vehicle structure behind the wheel. The wheel includes a circular frame for supporting a ground engaging tire and adapted for securance to the wheel hub or axle of a racing vehicle. A circular array of apertures extends through the side face of the frame adjacent the rim thereof upon which the tire is to be mounted. A fin is associated with each of the apertures and extends outwardly from the side face at a location and in an orientation with respect thereto at which the fin will intercept air flow by the face as the wheel turns and divert such air flow through the aperture.

3,734,567

AIR CONVEYOR FOR FLAT THIN ARTICLES

Leong Quock Fong, San Jose, Calif., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Jan. 25, 1971, Ser. No. 109,254
Int. Cl. B65g 51/02
U.S. Cl. 302—2 R 6 Claims



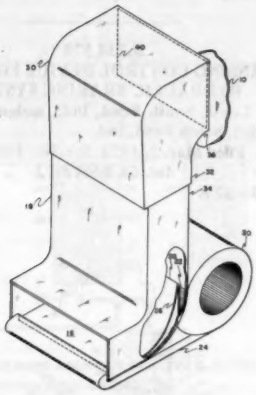
The conveyor includes an elongated channel-shaped trough for receiving circular articles. The trough includes a pair of side members extending in generally spaced parallel planes with openings through the members for transmitting air into the trough. The openings in one of the members are configured to provide air jets into the trough in a direction perpendicular to the one member to displace the articles in the trough toward the other member. The openings through the other member are configured to provide air jets having flow components predominantly parallel to the members to impart a propelling force to the articles. The articles are thus maintained in spaced relation from the one member in the course of their conveyance. Air issues outwardly from the trough along an open side thereof and imparts a force to the circular articles tending to rotate the latter in their direction of movement along the trough.

3,734,568

AIR DELIVERY SYSTEM

Ezra Cordell Lundahl, Idaho Falls, Idaho, assignor to Ezra C. Lundahl, Inc., Logan, Utah

Filed Nov. 4, 1971, Ser. No. 195,549
Int. Cl. B65g 53/40
U.S. Cl. 302—47 5 Claims



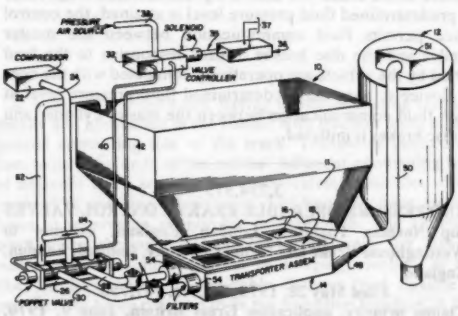
An air delivery system for particulate material wherein a vacuum is created in an area communicating an intake port with the flow of delivery air and a stream of pressurized air is directed into said area from a point adjacent the intake port to reduce turbulence caused by atmospheric air carrying entrained crop material into said intake port. The system also contemplates gradually expanding the cross-sectional area of the ducts throughout the delivery path to reduce damage to material entrained in the delivery air flow. Both method and apparatus are disclosed.

3,734,569

PNEUMATIC CONVEYING SYSTEM AND APPARATUS

George J. Vingas, Mundelein, Ill., assignor to Pneu-Veyor, Inc., Lincolnwood, Ill.

Filed Nov. 3, 1971, Ser. No. 195,116
Int. Cl. B65g 53/40
U.S. Cl. 302—39 14 Claims



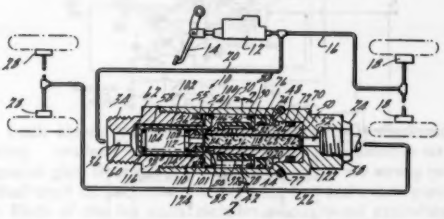
A pneumatic conveying system and apparatus for transferring or conveying powdered or granular material from one place to another including, transporter means having a plurality of compartments whereby each of the compartments first receives the material and then compressed air is introduced to the filled compartment to convey, transfer and discharge the material from said compartment to the delivery or destination station. The operations are in timed relation and in a continuous cycle so that when one compartment is filling the other compartment will be discharging, thereby expediting the transfer of the material. Air speed control valves or metering devices are included for controlling the rate or speed of the exhausting or delivery of the material from the compartments.

3,734,570

PROPORTIONING DEVICE

William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Sept. 2, 1970, Ser. No. 68,895
Int. Cl. B60t 8/26, 11/34
U.S. Cl. 303—6 C 18 Claims



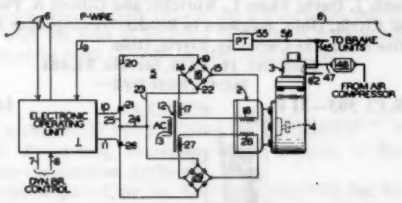
A device for varying the proportion of brake pressure delivered to the front and rear brakes of a vehicle having a differential area piston for modulating the brake pressure delivered to the rear brakes after a certain inlet pressure is reached, and an additional member cooperating with the differential piston to provide a fixed offset between the pressure delivered to the front and rear brakes after a certain differential between front and rear brake pressures is reached.

3,734,571

ELECTRO-PNEUMATIC BRAKE SYSTEM

Rudolph A. Coccia, North Versailles, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 25, 1972, Ser. No. 220,576
Int. Cl. B60t 13/68
U.S. Cl. 303—20 8 Claims



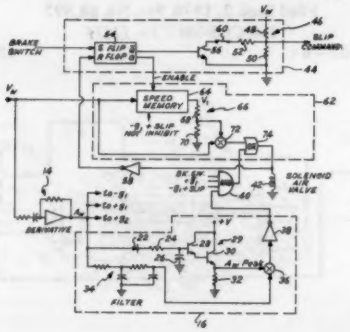
Digital application and release brake control signals generated by an electronic operating unit in accordance with the difference between a desired retardation signal and the available dynamic brake effort are provided to control a pair of thyristors in an a.c. control circuit for energizing one or the other of separate field windings of a torque motor, the output shaft of which drives a pneumatic relay valve device between application, lap and release positions, accordingly. The output of the relay valve provides friction brake effort sufficient to compensate for the inability of the dynamic brake to satisfy the desired level of ratardation called for. A pneumatic means of controlling the relay valve device independent of the torque motor is available to assure friction braking in the event the torque motor drive fails.

3,734,572

ADAPTIVE BRAKING CONTROL SYSTEM USING PEAK WHEEL DECELERATION DETECTOR AND INITIAL HIGH SLIP

George B. Hickner; Michael Slavin, both of South Bend, Ind., and Donald W. Howard, Baltimore, Md., assignors to The Bendix Corporation, South Bend, Ind.

Filed Dec. 7, 1970, Ser. No. 95,785
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **2 Claims**



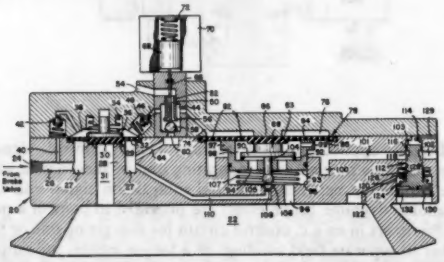
A control portion of an adaptive braking system utilizing peak wheel deceleration to prevent the skidding of an automotive vehicle. The control portion assumes the vehicle is operating on a high coefficient surface for a first cycle of brake pressure modulation. After the first cycle of modulation, if the vehicle is operating on a low coefficient surface, appropriate logic will change the allowable percent slip to a lower value. Along with the initial high coefficient surface condition for the first cycle of brake pressure modulation is included a means to memorize the initial speed upon applying the vehicle brakes. The braked wheel is brought back to a given percentage of the initial speed by further decay of brake pressure during the first cycle of modulation.

3,734,573

ADAPTIVE CONTROL FOR FLUID PRESSURE BRAKING SYSTEMS

Dennis J. Davis; Sham L. Kurichh, and Gilbert A. Pataky, all of Elyria, Ohio, assignors to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Oct. 16, 1970, Ser. No. 81,481
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **14 Claims**



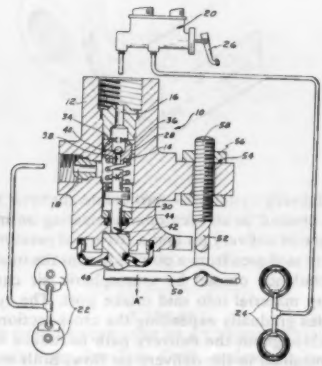
Adaptive control for a fluid pressure braking system of the type which when a wheel decelerates to an impending skid opens an exhaust valve to reduce pressure in the actuator and after the wheel has accelerated in response thereto closes the exhaust valve and restores pressure in the actuator, the invention including apparatus responsive to the fluid pressure in the actuator at the time the exhaust valve is opened for controlling the rate of fluid flow from the actuator through the exhaust port, the rate of fluid flow being preferably controlled by apparatus for varying the effective exhaust area in the path of fluid flow from the actuator in response to pressure in the actuator whereby for high actuator pressure a small exhaust area is provided and for a low actuator pressure a large exhaust area is provided.

3,734,574

LOAD SENSING CONTROL DEVICE FOR A VEHICLE HYDRAULIC BRAKING SYSTEM

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 2, 1971, Ser. No. 120,144
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **5 Claims**



A control device is provided for a vehicle hydraulic braking system which includes disc brakes on the front wheels of the vehicle and drum brakes on the rear wheels of the vehicle. The control device is interposed in the brake line between the master cylinder and the front wheel disc brakes and delays fluid communication through the brake line until the fluid pressure in the brake line attains a predetermined level. After the predetermined fluid pressure level is attained, the control device permits fluid communication between the master cylinder and the disc brakes. Means responsive to the load carried by the vehicle are operatively connected with the control device to vary the predetermined fluid pressure level at which fluid communication between the master cylinder and the disc brakes is initiated.

3,734,575

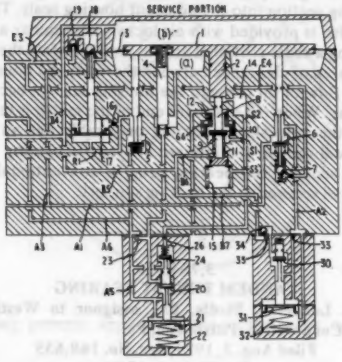
FLUID PESSURE OPERABLE BRAKE CONTROL VALVES

Philip Norman Paginton, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed May 28, 1971, Ser. No. 147,750
Claims priority, application Great Britain, June 9, 1970, 27,923/70
Int. Cl. B60t *15/22*
U.S. Cl. 303—33 **10 Claims**

A triple valve for fluid operable braking is provided with an additional emergency braking valve portion which has its own pressure responsive member which is responsive to at least a predetermined reduction of brake pipe pressure relative to quick action chamber pressure in a given period of time to open a valve to apply pressure to the brake cylinder from a reservoir and to vent the brake pipe, the pressure responsive

member having an arrangement of chokes such that on movement of the pressure responsive member away from the initial



position a choke passage between the quick action chamber and brake pipe becomes more constricted.

3,734,576

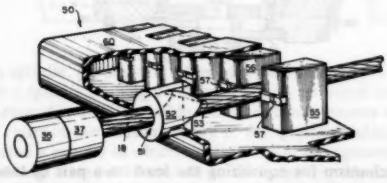
TRACK FOR VEHICLES

Danforth Kingsbury Heiple, Peoria; Danny Lee Hillman, Pekin; Edward George Orth, and Paul Joseph Stueve, both of Peoria, all of Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.

Filed July 6, 1971, Ser. No. 159,723

Int. Cl. B62d *55/24*

U.S. Cl. 305—37 **1 Claim**



A sectional rubber track having cables extending longitudinally and embedded in the rubber with traction teeth on the ground contacting side of the track. Transverse connecting bars secure the ends of the cables. Adjacent connecting bars of adjacent track sections form intercalated knuckles which connect by meshing relationship. The knuckles have aligned holes to receive an anchor bar therethrough. The knuckles pivot upon the anchor bar. The cable ends are fixedly mounted to the connecting bar by swaging, riveting, or the like, the location where the cable changes from flexible to non-flexible being referred to as the transition location. A ferrule enclosing the cable is mounted at each transition location. The ferrule has a larger inner diameter than the diameter of the cable and the space between cable and ferrule is filled with an epoxy to allow limited flexing of the cable. Line pivots and associated seats are located around the cables near the ferrules. Each line pivot is secured to a cable with a pair of wedge portions forming two line edges on opposite sides of the cable and radial and transverse to the cable. Complementary seats upon which the edges pivot are mounted on bearing blocks in hollow channel structures extending across the track sections.

3,734,577

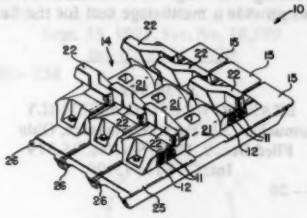
TRACK ASSEMBLY FOR ENDLESS TRACK VEHICLES

Donald L. Snellman, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.

Filed Nov. 16, 1970, Ser. No. 89,822

Int. Cl. B62d *55/24*

U.S. Cl. 305—40 **10 Claims**



A track assembly for endless track vehicles is disclosed utilizing endless, elastomeric-sheathed, elastomer-impregnated glass fiber cable structures on which are strung individual track sections composed of a lug unit and a shoe plate unit. Each of the lug units includes passageways extending transversely of the length dimension thereof for receiving the continuous sheathed cable structures. The lug units are held in spaced apart relation from each other by integral, regularly spaced elastomeric projections extending laterally from the sides of the cable structures. The shoe plate units are secured to each of the lug units and hold the sheathed cable structures in position in the passageways without substantial compressive loading of the cable structures. The elastomeric sheath is bonded to the elastomer impregnated cables, substantially eliminating relative movement between the cables and the surrounding sheath. A load exerted on any individual track section by the drive sprocket of the track vehicle is shared with the adjacent track sections. Movement between the track sections is limited to that within the elastic limit and below the tear limit of the sheath and cables embedded in the sheath. Each of the lug units is provided with means forming a mechanical stop which prevents flexing of the cables beyond their elastic limit and means for engaging the drive sprocket of the vehicle through which vehicle drive forces are transmitted to the track assembly. Integral rails projecting from each of the lug units transversely of their length dimension and substantially parallel to the passageways for the cable structures extend beyond the opposite sides of the lug units and are engageable with the rails of adjacent lug units to limit lateral movement of the track sections relative to each other.

3,734,578

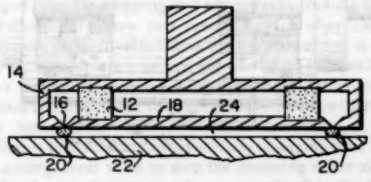
MAGNETIC FLUID PNEUMATIC BEARINGS

Ronald E. Rosensweig, Lexington, Mass., assignor to Ferrofluidics Corporation, Burlington, Mass.

Continuation-in-part of Ser. No. 5,167, Jan. 23, 1970, Pat. No. 3,612,630. This application Oct. 6, 1971, Ser. No. 186,926

Int. Cl. F16c *39/06*

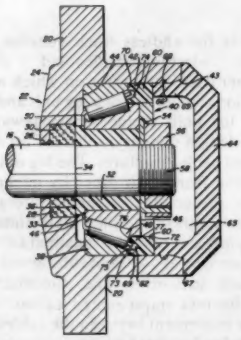
U.S. Cl. 308—10 **25 Claims**



A bearing assembly which includes a pin disposed within a housing and a magnetic fluid seals a fluid bearing pad between

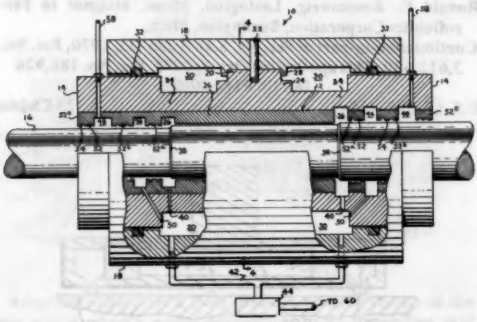
the outer surface of the pin and the inner surface of the housing. The sealed fluid bearing pad provides a pneumatic action in response to thrust forces acting on either the housing or the pin. A plurality of magnetic fluid rings are disposed externally of the sealed bearing pad and between the surfaces of the pin and housing to provide a radial restoring force between the pin and the housing when an offsetting force acts on either the pin or the housing. The rings serve an additional function in that they also provide a multi-stage seal for the fluid-bearing pad.

3,734,579
BEARING HOUSING ASSEMBLY
Gary B. Schumacher, 320 Park St., Navarre, Ohio
Filed Dec. 9, 1970, Ser. No. 96,379
Int. Cl. F16c *13/00*
U.S. Cl. 308—20 **8 Claims**



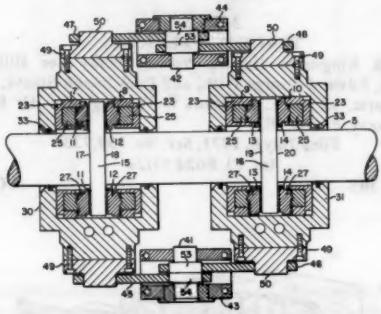
A bearing housing assembly to seal and simplify the installation of tapered roller bearings, consisting of; a felt seal sealing along the shaft and bushing end of the housing, a bearing housing cap snapping into the housing to seal the open end of said housing, and a bearing retainer ring located between a bearing and a housing cap to locate the bearing within the housing and retain relatively movable bearing members against incidental axial loading tending to unseat them.

3,734,580
SPLIT SLEEVE BEARING WITH INTEGRAL SEALS
Vincent Americo Piscitelli, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed June 22, 1971, Ser. No. 155,544
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.3 **2 Claims**



An axially split sleeve bearing is described wherein the housing seal is formed integrally with the bearing to inhibit oil leakage by permitting a reduction in the normally required clearance between the housing seal and the shaft. An axially split bearing support circumferentially encloses the composite bearing and housing seal and is spaced therefrom to form dual annular passageways for removal of oil passing axially from the bearing section into the adjacent housing seals. The housing seal also is provided with air locks, i.e., annular air chambers having a cross-sectional area at least five-fold the circumferential area of clearance between the shaft and housing seal, to inhibit flow of oil through the housing seals at each end of the bearing. When the outboard end of the motor is readily accessible, the split sleeve bearing preferably has an integral housing seal only at the inboard end of the bearing with the outboard seal for the bearing being a conventional unitary housing seal secured to the bearing support.

3,734,581
TANDEM THRUST BEARING
Albert F. LeBreton, Media, Pa., assignor to Westinghouse Elecric Corporation, Pittsburgh, Pa.
Filed Aug. 3, 1971, Ser. No. 168,635
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 **14 Claims**



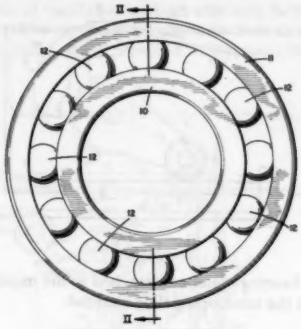
A mechanism for equalizing the load on a pair of tandem thrust bearings comprising a pair of cranks disposed on opposite sides of a rotatable shaft having a thrust load thereon each crank having a pair of links pivotally connected thereto, and pivotally connected to each of the thrust bearings to cause the thrust bearings to move in unison to distribute the load equally.

3,734,582
COMBINATION BEARING MATERIALS
Jean Beauchet, Annecy (Haute Savoie), France, assignor to Societe Nouvelle De Roulements, Annecy (Haute Savoie), France
Continuation of Ser. No. 4,729, Jan. 21, 1970, abandoned.
This application Oct. 29, 1971, Ser. No. 194,069
Int. Cl. F16c
U.S. Cl. 308—173 **2 Claims**

This invention relates to the manufacture of rolling-contact bearings wherein the outer and inner races or rings were hitherto made of the same steel grade and subjected to a heat treatment with or without a preliminary cementation.

According to this invention, the inner races of the bearings are made of cementation steel and the outer races as well as the rolling-contact members, such as balls and rollers from

core-hardened alloy steel. The treatment consists of a case-hardening or cementation applied to the inner races and of a



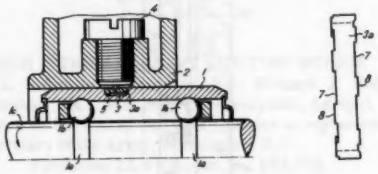
hardening process applied to the outer races and rolling bodies.

3,734,583

SPINDLE ADAPTED FOR TEXTILE MACHINERY

Vaclav Hosnedl; Zdenek Rajsigl; Jiri Rathusky; Miroslav Prokopec, all of Brno, and Milos Mladek, Usti nad Orlici, all of Czechoslovakia, assignors to Zvl Vyzkumny ustav pro Valiva loziska, Brno, Czechoslovakia

Filed Jan. 7, 1972, Ser. No. 216,020
Int. Cl. F16c *35/04*
U.S. Cl. 308—189 R **6 Claims**



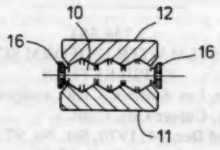
A spindle, particularly adapted for use in textile machinery, with a spindle bushing containing a shaft mounted in a pair of bearings disposed in a holder. On the circumference or at least on a part of the circumference of the spindle bushing there is located a groove in which a split circular or segmental elastic adjusting element is mounted, the adjusting element being held down from above by a thrust screw screwed into the spindle bushing holder.

3,734,584

ROLLER BEARING

Robert Martin Studer, Bristol BS9 4LH, England, assignor to The Secretary of State for Defence in Her Majesty's Britannic Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 17, 1971, Ser. No. 144,205
Int. Cl. F16c *33/00*
U.S. Cl. 308—213 **3 Claims**



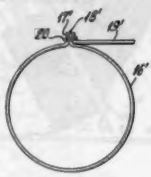
The disclosure of this invention pertains to a roller bearing in which the rolling element has the form of alternately orientated frusto-cones and the races have corresponding frusto-conical tracks.

3,734,585

PLASTIC IMPREGNATED FABRIC JOURNAL BEARING

Harold Ward Conru, South Burlington, Vt., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 703,702, Feb. 7, 1968. This application Sept. 25, 1971, Ser. No. 18,389
Int. Cl. F16c *33/20*
U.S. Cl. 308—238 **5 Claims**



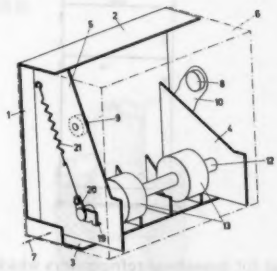
The invention contemplates an improved method of making fabric-lined journal bearings, of bore size determined by a mandrel. A piece of low-friction fabric material is cut from rectilinear stock, to such length between cut-off ends as to substantially equal the peripheral extent of the mandrel. A piece of bondable fabric is secured, as by sewing or clamping, to a cut-off end of the low-friction piece. The fabric composite, impregnated with hardenable material, is then wrapped onto the mandrel, beginning with the low-friction piece. The assembly is thereafter cured to hardness, and the mandrel removed.

3,734,586

PAPER HANDTOWEL DISPENSER

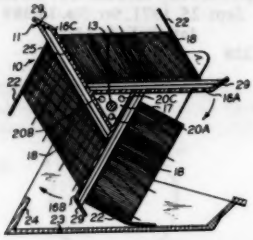
Conrad W. Schnyder, 9497 Triesenberg, Liechtenstein, assignor to CWS International AG, Zurich, Switzerland

Filed Aug. 4, 1971, Ser. No. 168,818
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 **10 Claims**



The paper handtowel dispenser mounts a paper handtowel roll from which towelling can be withdrawn over a metering roller. A timed stop arrangement is provided which can be changed over for stopping and temporarily locking the metering roller after every two revolutions or after each single revolution, respectively. When the handtowel roll is replaced, before it is completely empty, the part-used roll can be placed in the dispenser together with the first mentioned or fresh handtowel roll so that towelling can then be withdrawn, for some time, from both rolls simultaneously. A detector member is provided for automatically changing over the timed stop arrangement so as to stop the metering roller after every two revolutions if there is only one towel roll in the dispenser, and after each single revolution if there are two usable towel rolls in the dispenser.

3,734,587
ROTARY CARD FILE
Albert Karper, 5700 Collins Avenue, Miami Beach, Fla.
Filed Dec. 23, 1971, Ser. No. 211,420
Int. Cl. A47b *63/00*; **B42f** *9/00*
U.S. Cl. 312—186 **5 Claims**



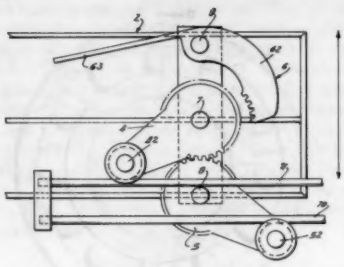
A rotary card file in which a card holder supported for rotation by a base structure has a plurality of trays that extend from a central hub and are equipped with retainer tracks that keep the cards in file alignment when the card holder is turned to position the tray in an upwardly facing access position, and which support the cards suspended from the tray when the card holder is turned to position the tray in a downwardly facing storage position.

3,734,588
REFRIGERATOR CABINET
Robert P. Ellis, 350 Lomas Santa Fe Drive, Solana Beach, Calif.
Filed Apr. 20, 1972, Ser. No. 246,070
Int. Cl. A47b *67/02*; **A47f** *5/08*; **A47b** *53/00*
U.S. Cl. 312—247 **4 Claims**

A cabinet for household refrigerators which may be an extension of or an accessory to the refrigerator, the cabinet being attached to the upper part of the refrigerator, which makes it too high for convenient access to the housewife when the cabinet is drawn forward out of the refrigerator, so access is provided by making the cabinet with an open bottom.

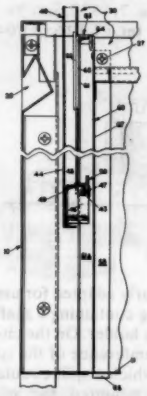
3,734,589
HEIGHT ADJUSTMENT MEANS
Wendell D. Morgan, Marion, Ill., assignor to Feeders Corporation, Edison, N.J.
Filed Nov. 15, 1971, Ser. No. 198,685
Int. Cl. A47b *51/00*
U.S. Cl. 312—351 **15 Claims**

Means are provided for adjusting the height of one or both sides of the upper basket in a dishwasher, the means including two interengaging members attached to support means on the



rack, with bearing members attached to the members adapted to move on the telescoping slide channel.

3,734,590
FILE
Robert B. Ormiston, Grandville, and Gale F. Wilcox, Wayland, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Apr. 21, 1971, Ser. No. 136,113
Int. Cl. A47b *88/00*
U.S. Cl. 312—322 **16 Claims**

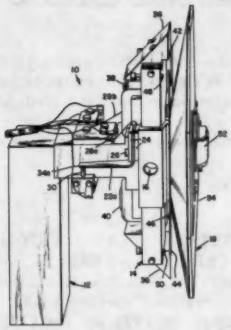


The file includes an open top tub having casters on its legs. There are side hangers located at the sidewalls such that hanging files can be hung between the sides, and there are end hangers and a central hanger spaced between the ends such that hanging files can be hung between each end and the central hanger. The end hangers are removably secured in the tub such that they can be removed to facilitate the insertion of an integral door and interior end wall assembly. In the assembly, the door is slidably mounted to the end wall by means of interfitting channels and the end wall can be releasably secured to the tub at the end thereof. The end wall itself includes a hanger flange to serve the function of the removed end hanger.

3,734,591
SCANNING SYSTEM WITH UNIFORM SCAN RATE AND RAPID RETURN
Spencer D. Howe, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 14, 1970, Ser. No. 97,641
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **24 Claims**

A mirror useful for signal processing and display apparatus is caused to oscillate in a cyclic manner with a uniform scan

during 66 percent of a cycle and a quick return during 34 percent of the oscillating cycle. Such uniform scan and quick return is effected by oscillating the mirror on an oscillating frame, the axes of oscillation of both elements being parallel to each other. The mirror is substantially free to pivot with respect to the frame and is provided with springs for periodic



contact with the frame at the end of each oscillatory arc for storage of spring energy to drive the mirror. The frame is oscillated in a substantially sinusoidal manner so that energy stored therein during the slower, active portion of the cycle is retransferred by impact to the mirror for the fast retrace thereof.

3,734,592

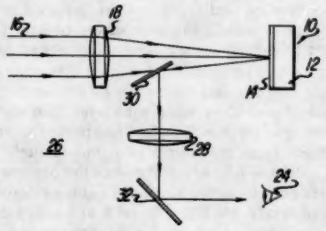
HIGH INTENSITY LIGHT LIMITING DEVICE

Zoltan G. Sztankay, Annandale, Va.; Richard J. Holland, Washington, D.C., and John P. Swirczynski, Adelphi, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 21, 1971, Ser. No. 154,798

Int. Cl. G02b *17/00*

U.S. Cl. 350—17 **8 Claims**



An optical device for limiting the transmission of high intensity light radiation through an optical system is disclosed. The device includes a limiting mirror consisting of a thin evaporative partially absorbing, partially reflective coating deposited on a radiation absorbing substrate. An objective lens is provided to focus incident light on a portion of the limiting mirror to maximize the energy density of the incident light beam. If the energy density of the focused beam exceeds a predetermined level, a small portion of the reflective coating is vaporized, markedly reducing the reflectivity of that portion of the limiting mirror. A portion of the substrate material may also be vaporized if the focused beam is of a particularly high energy density.

3,734,593

PLURAL-MICROSCOPE WITH LIGHT INDICATOR

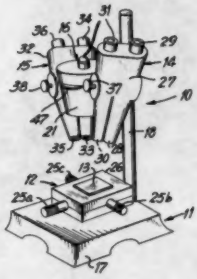
Iwao Mori, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 7, 1971, Ser. No. 150,567

Claims priority, application Japan, June 12, 1970, 45/58352

Int. Cl. G02b *21/22*

U.S. Cl. 350—31 **7 Claims**



A plural-microscope, preferably having two stereoscopic microscopes, is further provided with a light indicator for projecting onto a specimen supported by the stage a light spot which is substantially smaller than the field of view of each microscope, and the light indicator and stage are made movable relative to each other for varying the position of the light spot on the specimen so that the light spot can be used to identify a selected portion of a specimen to be viewed simultaneously by the microscopes.

3,734,594

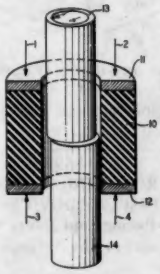
OPTICAL FIBER CONNECTOR

Ralph Francis Trambarulo, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 29, 1972, Ser. No. 239,034

Int. Cl. G02b *5/16*

U.S. Cl. 350—96 B **8 Claims**



An optical fiber connector comprises a deformable, annular core disposed between a pair of metallic pressure plates. The two fibers to be spliced are inserted into opposite ends of the core, and a longitudinal force applied to the plates. This causes the core to deform radially, simultaneously aligning and mechanically securing the fibers. Removing the pressure releases the fibers.

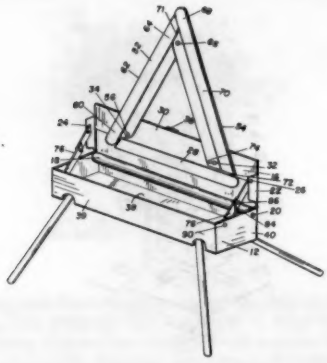
A core with a plurality of holes can be used to connect the fibers of a fiber cable.

3,734,595

FOLDING HIGHWAY EMERGENCY DEVICE

Marvin F. Bendzick, Pittsburgh, Pa., assignor to Cities Service Company, New York, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,668
Int. Cl. G02b *5/12*
U.S. Cl. 350—97 **3 Claims**



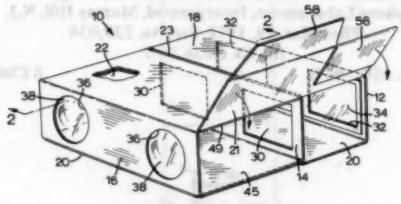
A storable highway reflector unit is shown having appropriate reflector surfaces which are foldable into a base and including unitarily mounted stabilizing legs for maintaining the reflector unit in an erect position.

3,734,596

VIEWER

Gunter Nerlich, Toronto, Ontario, Canada, assignor to Dimensional Production Limited, Toronto, Ontario, Canada

Filed Mar. 24, 1971, Ser. No. 127,747
Int. Cl. G02b *27/04*
U.S. Cl. 350—140 **2 Claims**



A collapsible device for viewing two images of an object to produce a three-dimensional effect. The images are mounted in a card which can be replaced in the device when other images are to be viewed.

3,734,597

PROCESS FOR PRODUCING A COLOR STATE IN A DISPLAY DEVICE

Donald Churchill, Kettering, and James V. Cartmell, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 707,706, Feb. 23, 1968, Pat. No. 3,600,060. This application Apr. 9, 1971, Ser. No. 132,884
Int. Cl. G02f *1/40*
U.S. Cl. 350—160 LC **6 Claims**

This disclosure is directed to articles of manufacture, chiefly display devices, containing minute "naked" droplets or inclusions of cholesteric liquid crystal material in a substantially continuous polymeric matrix, said liquid crystal material changing color or shade of color not only upon application of an electric potential but also upon removal of the field. The image produces has a comparable outline to that of the path of the electric field. Three chromatic states are evident, the normal color (before the electric potential is applied), the color given off when the electric field is applied, and the color observed when the electric field is removed. All three chromatic states are readily discernible from one another. The polymer

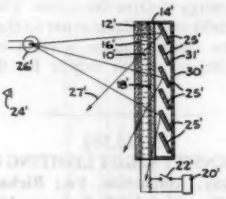
matrix protects the cholesteric liquid crystal droplets from aging and enhances electric field behavior because the third chromatic state (electric potential removed) has a greater longevity with the matrix-bound material versus unprotected material of identical composition but no polymeric matrix. Other advantages are also discussed.

3,734,598

LIQUID CRYSTAL DISPLAY DEVICE HAVING AN INCLINED REAR REFLECTOR

William Ross Aiken, Los Altos Hills, Calif., assignor to Display Technology Corporation, Cupertino, Calif.

Filed Apr. 30, 1971, Ser. No. 139,022
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **4 Claims**



A display device settable between transparent and translucent or opaque conditions comprising a layer of a material changeable between light-transmitting and light-scattering conditions in response to electric fields, such as the liquid crystal materials, front and rear covers of transparent material containing said layer, each having a transparent film of a conductive material, means for setting up an electric field between said films through said layer, a source of light in front of the front cover of said layer, and an inclined mirror arrangement located behind the rear cover of said layer for directing light from said source obliquely through said layer from its rear face to its front face in such a manner that the source of light is concealed from view by an observer before the front face of said layer when said layer is in transparent light-transmitting condition. This inclined mirror arrangement reflects the light from the source of light obliquely through said layer in a direction in which it misses the observer's eyes. In this manner light from the source of light is removed from view by the observer when the layer is in transparent light-transmitting condition, yet is available for scattering and thus gives the layer a frosted or milky appearance when the layer of light transmission changing material is in light-scattering condition.

3,734,599

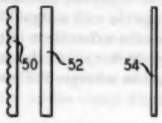
OPTICAL RASTER-TO-LINE CONVERTER

Martin Feldman, Springfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1971, Ser. No. 196,994
Int. Cl. G02b *3/06, 27/00*
U.S. Cl. 350—190 **6 Claims**

A two-dimensional matrix array of light beams is translated into a linear array having the same number of spots. This is ac-

complished by an optical converter that comprises a cylindrical lenslet plate crossed, not quite orthogonally, with a single



cylindrical lens. Each column of the matrix array of light beams is imaged by the converter to form a segment of the final line array.

3,734,600

FISHEYE LENS SYSTEMS

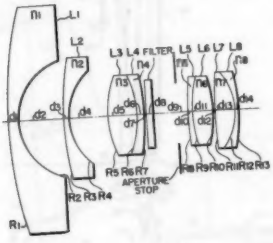
Yoshiyuki Shimizu, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,639

Claims priority, application Japan, Dec. 24, 1970, 45/116645

Int. Cl. G02b *9/60*

U.S. Cl. 350—196 **4 Claims**



A lens system comprises, in sequence moving from the object side, first and second negative meniscus lenses both convex to the object side, a biconvex lens, a negative meniscus lens cemented to the third lens, and fifth to eighth lenses including one or two negative lenses and cemented together so as to form two lens groups. An aperture stop is interposed between the fourth and fifth lenses. The lenses are arranged to satisfy predetermined conditions, thereby providing a fisheye lens system having a long back-focus two to three times greater than its focal length and yet having a compact construction.

3,734,601

FLOW CELL ASSEMBLY FOR COLORIMETRIC MEASUREMENTS

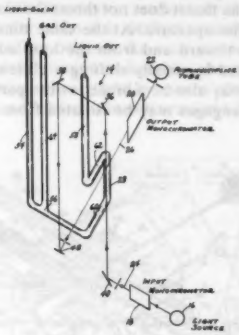
Louis Robert Heiss, Annapolis, Md., assignor to Baxter Laboratoris, Inc., Morton Grove, Ill.

Filed July 8, 1971, Ser. No. 160,776

Int. Cl. G01n *1/10, 21/00*

U.S. Cl. 356—246 **18 Claims**

A flow cell assembly for adapting an apparatus for both fluorometric and colorimetric studies. The assembly includes a holder having a folded optical path between an external light source and photosensitive response means. The light input to the optical path is at right angles to the light output therefrom so that the assembly may be employed in place of the sample cuvette of a conventional spectrofluorescence measuring instrument. The holder contains a flow tube having an offset sight passageway portion supported endwise in the optical path. The holder includes a light shield plate slotted to receive the legs of the offset portion and to substantially protect the offset sight passageway portion and the folded optical path



from stray light. The flow tube may include an integral debubbler.

3,734,602

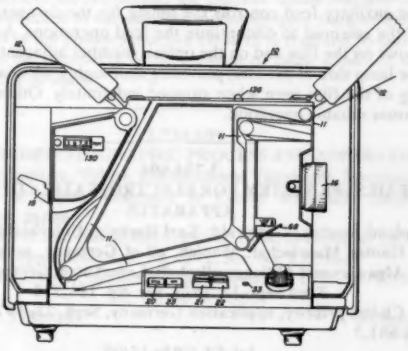
SLOT LOAD PROJECTOR

Howard C. Deck, Rush, N.Y., assignor to Grafler Inc., Pittsford, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,579

Int. Cl. G03b *1/56*

U.S. Cl. 352—157 **58 Claims**



A slot load projector uses a slot for edgewise loading of a filmstrip, and simplifies the controls for forward, reverse, rewind, and fast forward. A single control lever moves between two positions for forward and reverse projection in one position, and load, rewind, and fast forward run in another position. Push buttons for forward run, reverse run, off, and still, complete the operator controls, for simpler and easier operation. Along with increased operational functions with fewer controls, the projector is simplified in structure for economy of manufacture.

3,734,603

PROJECTOR FOR ANALYTICAL VIEWING OF MOVING PICTURES

Max E. Wastl, and Richard L. Shirley, both of Lafayette, Ind., assignors to Lafayette Instrument Company, Inc., Lafayette, Ind.

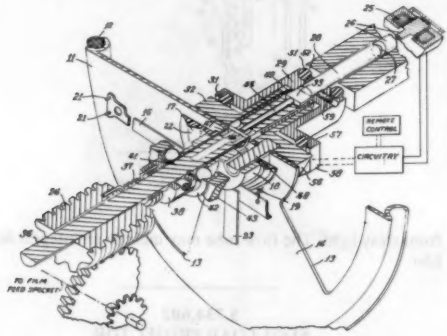
Continuation-in-part of Ser. No. 801,247, Feb. 18, 1969, abandoned. This application May 3, 1971, Ser. No. 139,760

Int. Cl. G03b *21/38*

U.S. Cl. 352—169 **12 Claims**

The moving action is stopped and started by a solenoid, with diverse methods of control to stop the action or to show the

successive frames on the film at varying rates such as one per second to eight per second. To interrupt the advancing of the film through the light beam, the conventional claw-actuating cam is retracted so that it does not thrust the claw into engagement with the film aperture. At the same time, the auxiliary feed of the film toward and from the loop advanced by the claw is interrupted by axially shifting a clutch member. The clutch member may also be a brake; or the parts which are to stop when it disengages may be isolated from rotating parts.



The shutter operates continuously, maintaining constant light intensity. A timing cam rotates continually with the shutter to time the actuation of the solenoid accurately for resuming all feeding operations. Another cam, rotating with the drive for the auxiliary feed controls the timing for the de-energization of the solenoid to discontinue the feed operations. An air jet blows on the film and on the optical member adjacent to it on the lamp side of the film, providing thoroughly adequate cooling of the film even when stopped indefinitely. Other details ensure reliable operation.

3,734,604

FAILSAFE SYSTEM FOR ELECTROSTATIC COPYING APPARATUS

Roland Szostak, Grunwald; Karl Hartwig, Unterhaching, and Gunter Maurischat, Munich, all of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 17, 1971, Ser. No. 181,374

Claims priority, application Germany, Sept. 22, 1970, P 20 46 681.3

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **12 Claims**

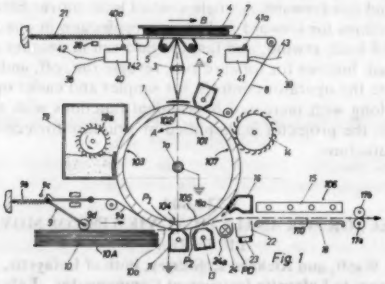


Fig. 1

An electrostatic copying apparatus wherein a photoelectric detector scans the path for transfer sheets which receive powder images from a drum-shaped xerographic surface. The detector cooperates with two timers the first of which is actuated by the latent image producing device to furnish signals at intervals when the detector normally should not detect sheets and the second of which is also actuated by the latent image producing device but at such intervals that it furnishes signals when the detector normally should detect transfer sheets. The operation of the apparatus is terminated if a signal from the detector coincides with the signal from the first timer because this indicates a pileup of sheets, and also if a signal from the detector does not coincide with a signal from the second timer because this indicates the exhaustion of the supply of sheets in the apparatus. The detector scans the path for the sheets upstream of a fusing station wherein the powder images are fixed to respective sheets.

3,734,605

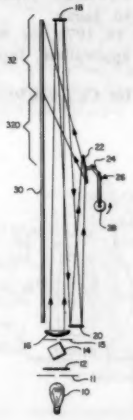
MECHANICAL OPTICAL SCANNER

George J. Yevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed July 21, 1971, Ser. No. 164,744

Int. Cl. G03b *21/26, 21/28, 21/00*

U.S. Cl. 353—30 **6 Claims**



A magnifying and reading device for microfiche films. The required magnification is achieved by breaking up the object into a series of narrow segments and sequentially projecting them onto a viewing screen by a rocking mirror.

3,734,606

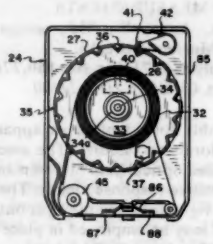
CARTRIDGE CONSTRUCTION FOR CONTAINING AUDIO AND VISUAL MEDIUMS

Donald E. Irving, Elmwood Park, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 21, 1970, Ser. No. 82,725

Int. Cl. G03b *31/06, 21/00*

U.S. Cl. 353—120 **2 Claims**



A cartridge construction has a central hub for receiving a quantity of magnetic tape and a film disc, each positioned

about the axis of a shaft, to form an integral audio-visual display unit for use in audio-visual display apparatus. The cartridge has aligned apertures at a radial location outwardly from the shaft axis through which light passes to project a film segment contained within the cartridge and in registry with the aligned apertures, and further has an opening formed within one wall of the cartridge to allow an extended advancing pawl (or finger) to enter the cartridge through this opening and rotate the film disc one film segment at a time when such cartridge is inserted into the audio-visual display apparatus.

ERRATUM

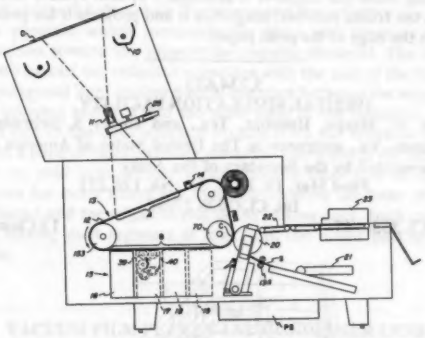
For Class 355—14 see:
Patent No. 3,734,604

3,734,607

COLOR REPRODUCTION APPARATUS

Howard C. Davis; Harold E. Trumbull, and Charles A. Cummings, all of Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.

Filed June 4, 1969, Ser. No. 830,286
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **2 Claims**



A multi-color electrostatic printing machine having processing components adapted to produce an image for each color of an original being copied, individual color developing units for effecting development of the corresponding images and a program arrangement for coordinating in timed sequence the operation of the processing components and the transfer of each developed image in superimposed relationship upon sheets of paper.

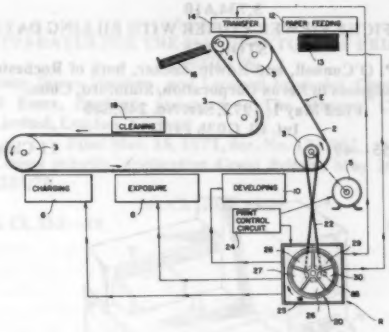
3,734,608

MACHINE PROGRAMMER

Lionel Russell Hickey, and Ellsworth Jacob McCune, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 19,999, March 16, 1970, Pat. No. 3,659,109. This application July 29, 1971, Ser. No. 167,461
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **6 Claims**

A machine programmer is provided for controlling work performed on a work piece which moves through separate work stations wherein a shift register selectively energizes and de-energizes the work stations in response to movement of the work. The shift register includes a multisectioned cylinder which is divided into individual light-tight sectors each of which has a slot along the periphery of the cylinder through which light can pass and is rotatably driven in response to movement of an endless photoconductive member. Each sector has a switching circuit which includes a lamp and a photosensitive device. The lamp is turned on by an input signal from a radiation device, such as an initiator light, adjacent the cylinder when it is desired to make electrophotographic copies of an original. As each sector moves along a circular path past the initiator light the photosensitive device turns on the lamp, whose light by means of a photosensitive device maintains the circuit in actiavted condition so that the



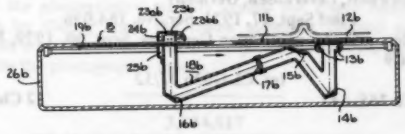
lamp remains illuminated. The initiator light remains on until the number of sectors illuminated corresponds with the number of document copies to be made. As the cylinder is rotated the light therein activates each of a series of photosensitive devices sapced around the cylinder which energize circuits connected to various electrophotographic stations along the path of the photoconductive element in response to movement of the photoconductive element to cause copies of the original to be made.

3,734,609

ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS

Hiroshi Tanaka, Tokyo, and Shinkichi Takahashi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 563,899, July 8, 1966, abandoned. This application Apr. 14, 1971, Ser. No. 133,788
Claims priority, application Japan, Feb. 23, 1966, 41/10915
Int. Cl. G03g *15/00*
U.S. Cl. 355—16 **3 Claims**



A process and apparatus for forming an electrostatic image on a photosensitive plate having a conductive base, a photoconductive layer overlying the base and exhibiting p-type or n-type semiconductivity, and an insulative layer overlying the photoconductive layer. The photosensitive plate is characterized in having carrier charge of a polarity corresponding to the conductivity type of the photoconductive layer injectable from the conductive base into the photoconductive layer and bound in the region of the interface between the insulative and photoconductive layers. The conductive base is transparent to activating light and the insulative layer is opaque to the activating light. A first charge of a polarity opposite to the conductivity type of the photoconductive layer is applied onto the insulative layer to inject and bind carrier charge in the region of the interface between the insulative

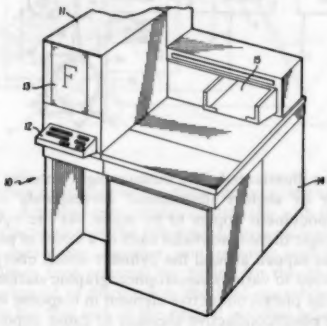
and photoconductive layers. Then, the photoconductive layer is exposed to a pattern of activating image light by projecting the image light through the transparent conductive base while a corona discharge is applied onto the insulative layer. Thereafter, the photoconductive layer is exposed to activating light through the transparent conductive base to discharge bound carrier charge remaining in the region of the interface and form a high contrast electrostatic image.

3,734,610

MICROFICHE VIEWER-COPIER WITH BILLING DATA STORAGE

Richard P. O'Connell, and Edwin Zucker, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 1, 1972, Ser. No. 248,840
Int. Cl. G03b 27/52
U.S. Cl. 355—40 **11 Claims**



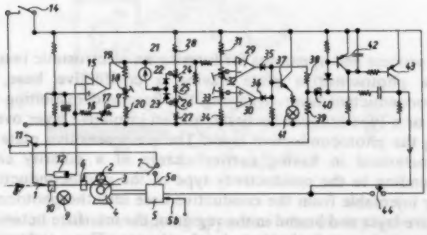
A microfiche viewer and copier provides for automatic random access to a desired microfiche card from a library, and automatic selection of a frame thereof for viewing. Copies of the selected frame or of a following sequence of frames may be made. Identification of each microfiche card and frame copied, the number of copies made, and the user is obtained and stored for billing and copyright royalty computation.

3,734,611

PHOTOGRAPHIC PRINTING APPARATUS

Walter Knapp; Volker Weinert, and Kurt Ramsauer, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 27, 1971, Ser. No. 184,096
Claims priority, application Germany, Sept. 30, 1970, P 20 48 061.9
Int. Cl. G03b 27/52
U.S. Cl. 355—41 **12 Claims**



The average transparency over substantially the complete surface of each negative of a film strip is measured and negatives whose so-measured transparency lies outside a predetermined range are transported past the printer without being reproduced.

3,734,612

NUMBER ON PRINT OPTICAL APPARATUS

James E. Harvey, and Oliver W. Gnage, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,855
Int. Cl. G03b 27/32, 17/24
U.S. Cl. 355—40 **3 Claims**

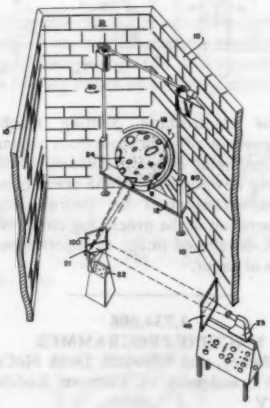
Optical print apparatus for use with film having individual frame numbers exposed for each camera exposure. During printing from the negative a secondary optical system intercepts the frame number, magnifies it and projects it for printing on the edge of the print paper.

3,734,613

ORBITAL SIMULATION FACILITY

Ralph W. Harpe, Houston, Tex., and Henry S. Schrader, Vienna, Va., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 19, 1971, Ser. No. 126,221
Int. Cl. G03b 27/64
U.S. Cl. 355—47 **13 Claims**



A method and apparatus for determining the orientation of a spacecraft in orbit around a central body and providing a simulated representation of the surface of the central body as seen from the spacecraft. A spherical model representing the central body is rotated by a motor-driven frictional belt drive. The axis of rotation is established by an adjustable vacuum cup device and an optical system projects a virtual image of the central body's surface as telemetered from a spacecraft onto the model. A viewing aperture is moved in relation to the model until the virtual image and a reflected image from the model coincide to produce the same view as from the spacecraft.

3,734,614

PHOTOGRAPHIC COPYING APPARATUS

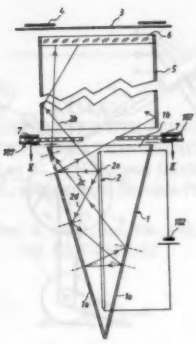
Wolfgang Zahn, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 7, 1971, Ser. No. 150,435

Claims priority, application Germany, June 11, 1970, G 70 21 913.5

Int. Cl. G03b 27/54

U.S. Cl. 355—67 8 Claims



A photographic copying apparatus wherein the light source is an elongated electronic flash lamp and the reflector is a hollow pyramid which surrounds the lamp and diverges in a direction toward the support for copying material. The symmetry axis of the reflector coincides with the axis of the lamp. A polygonal light mixing duct is installed between the support for copying material and the open base of the reflector, and that end of the duct which is remote from the reflector contains a pane of light diffusing material. The walls of the reflector are cold light mirrors which transmit heat. One or more guides for color filters are installed between the base of the reflector and the adjacent end of the mixing duct. Such end of the mixing duct registers at least with the major part of the base.

3,734,615

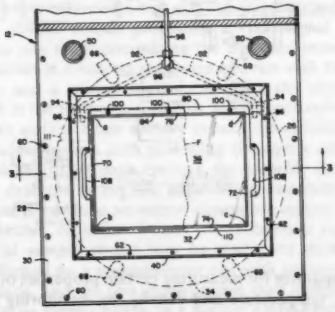
VACUUM FILM PLATEN AND CONDENSER LENS ASSEMBLY FOR PHOTO REPRODUCTION APPARATUS

Joseph H. Wally, Jr., Kansas City, Mo., assignor to Western Blue Print Co., Kansas City, Mo.

Filed May 27, 1971, Ser. No. 147,497

Int. Cl. G03b 27/64

U.S. Cl. 355—76 13 Claims



The condenser lens system of a camera-projector has a rectangular channel in the first surface thereof which is connected to an air evacuating pump and adapts said surface as a film platen, and a plate embedded in said surface along one side of the channel has means for orienting a film on said surface. The plate has an inner wall along its length positioned so as to form a space with the part of the channel in which it is positioned for the passage of air.

3,734,616

APPARATUS FOR THE MANUFACTURE OF PRINTED CIRCUITS

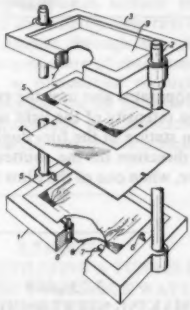
Antony James Mayhew, and Leonard Frederick Cheale, both of Essex, England, assignors to The Marconi Company Limited, London, England

Filed Mar. 15, 1971, Ser. No. 123,962

Claims priority, application Great Britain, May 20, 1970, 24,333/70

Int. Cl. G03b 27/20

U.S. Cl. 355—89 5 Claims



An optical contact printer for use in the manufacture of photographically produced printed circuit boards comprises two frame members slidably connected together. Photographic masters are held in registration on the inner faces of the frame members and between the photographic masters is inserted a printed circuit board coated in photo-resist. Air channels are supplied on the inner faces of the frame members abutting the photographic masters and air suction produced to hold the photographic masters against the frame members. Thus by sliding apart the frame members printed circuit boards may be inserted into the projector without the need to handle the photographic masks.

3,734,617

FILM DEPLETION DETECTION SYSTEM

Paul E. Kitch, West Springfield, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

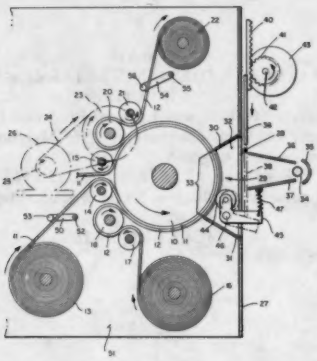
Filed Apr. 26, 1971, Ser. No. 137,413

Int. Cl. G03b 27/10

U.S. Cl. 355—111 9 Claims

A machine for handling films or tapes, such as film duplication apparatus, in which the image on an original master film is reproduced on a duplicating film by contact printing techniques, wherein the individual films or tapes are brought into overlying relationship with one another, jointly transported through an operational station, such as an illumination station in the case of film duplication, and separated. The apparatus includes a mechanism for moving each of the individual films or tapes through the operational stations, which mechanism is driven by an electric motor. Switches are employed to detect the depletion of one of the films or tapes, and to stop the electric motor driving the transport mechanism so

that, in the case of film duplication apparatus, the master film will not be advanced further until fresh duplicating film is fed into the apparatus, or duplicating film will not be fed into the apparatus until a new master film has been threaded into the apparatus, depending upon which of the films became



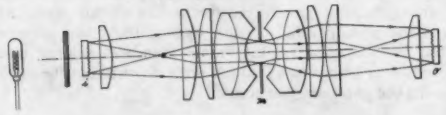
depleted. The apparatus also uses the switches both to turn off or to reduce the intensity of the light source directing light at the illumination station of the film duplicating apparatus, and to change the direction on the shutter drive motor so as to close the shutter, when one of the films is depleted.

3,734,618

METHOD OF MAKING STEREOSCOPIC PHOTOGRAPHS

Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.

Division of Ser. No. 747,931, July 26, 1968. This application Aug. 24, 1970, Ser. No. 66,356
Int. Cl. G03b *35/00*
U.S. Cl. 355—132 **2 Claims**



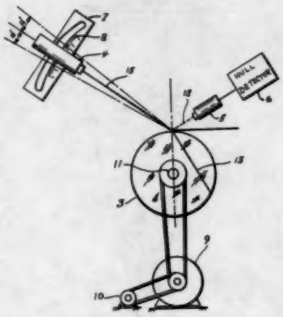
Improved methods and systems are provided for producing stereoscopic photographs which exhibit optical characteristics resembling those of a hologram in that a photograph is produced by the methods of the invention the aspect of the recorded three-dimensional image changes with change of viewpoint about both horizontal and vertical axes. The photograph produced in accordance with the methods of the present invention may be appropriately termed an "integram" or an "integraph," and it possesses important advantages over the hologram. For example, coherent light, such as laser illumination, is not required for producing or viewing the photograph, the photographic equipment required to produce the photograph is compact and simple to operate, and exposure times for producing the photograph correspond to those which would be required for ordinary two-dimensional photography under the same conditions.

3,734,619

METHOD UTILIZING BREWSTER ANGLE FOR DETERMINING ANGULAR VELOCITY AND LIGHT BEAM INCIDENCE ANGLES

Ronald G. Newburgh, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 10, 1971, Ser. No. 170,502
Int. Cl. G01p *3/36*
U.S. Cl. 356—27 **1 Claim**



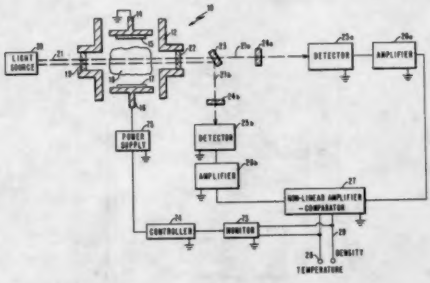
A light beam linearly polarized in its plane of incidence is projected onto the peripheral surface of a notably refracting disc at an angle that effects absorption of all the incident light. Means for detecting reflected light are positioned proximate to the point of incidence. Angular velocity of the disc is determined by the amount of change in angle of incidence of the light beam required to eliminate any light reflected due to disc movement. Change in angle of incidence of the light beam is measured by rotating the disc to a speed that eliminates any light reflected due to such change in angle of incidence.

3,734,620

MULTIPLE BAND ATOMIC ABSORPTION APPARATUS FOR SIMULTANEOUSLY MEASURING DIFFERENT PHYSICAL PARAMETERS OF A MATERIAL

Paul E. Cade, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,363
Int. Cl. G01n *21/00*; B05c *11/00*
U.S. Cl. 356—73 **11 Claims**



An apparatus for measuring certain properties of a material; such as, temperature and density, by monitoring the atomic absorption of two absorbable spectral lines of the material. The apparatus is based on a complete instrumental system composed of an apparatus for producing an atomic vapor; e.g., a sputtering apparatus, an emitter system capable of

producing frequencies absorbable by the atomic vapor; e.g., a light source parallel systems of spectral selection, e.g., optical filters, parallel systems for converting optical information into electrical signals; e.g. photo-electric transducers; and, finally a measurement system which displays the electrical signals, from the parallel transducers, in terms of density and temperatuer of the atomic vapor or in terms of the rate of deposition of material on a work piece in the sputtering apparatus.

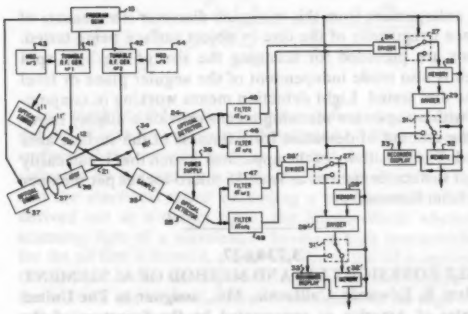
The apparatus, in conjunction with an emission spectrometer, can also be used to determine the composition of an atomic vapor.

3,734,621

SPECTROPHOTOMETER UTILIZING MEMORY STORAGE CALIBRATION TECHNIQUES

Robert E. Moody, Los Altos Hills, and David A. Wilson, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 6, 1971, Ser. No. 205,243
Int. Cl. G01j *3/42*
U.S. Cl. 356—95 **12 Claims**



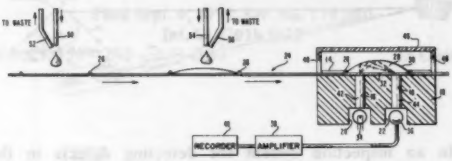
A spectrophotometer having no moving parts in the monochromator or the optical beam paths through the reference material and the sample material is disclosed. A preferred form of monochromator utilized is an acousto-optical filter tuned over the desired spectrum electronically by variation of the radio frequency producing the acoustical wave in the filter. A single beam spectrophotometer employs a memory device for storing the detected transmitted optical radiation in a first calibration run with the sample absent from the path, a divider circuit producing a ratio signal output responsive to one input comprising the detected transmitted optical radiation in a second measurement run with the sample in place and a second input comprising the absorption signal stored in the memory. A double beam spectrophotometer utilizes an optical beam splitter to split the radiation into two separate paths, one path extending through a reference material and the other path through the sample, the transmitted light detected in the two paths being transmitted to a divider circuit to produce an output dependent on the ratio of the two detected radiation beams. A calibration run with reference and sample absent may be made and stored in a memory, followed by a measurement run with reference and sample in place, and the two output ratios then compared to give a final ratio signal output. In a further embodiment, two optical sources and two associated monochromators are provided, the radiation from each being directed through the beam splitter into the two separate reference and sample paths to the detector circuitry.

3,734,622

APPARATUS FOR PHOTOMETRICALLY ANALYZING A DROPLET OF A SAMPLE LIQUID

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,545
Int. Cl. G01r *21/00*; G01j *3/46*; G01r *21/26*
U.S. Cl. 356—103 **13 Claims**



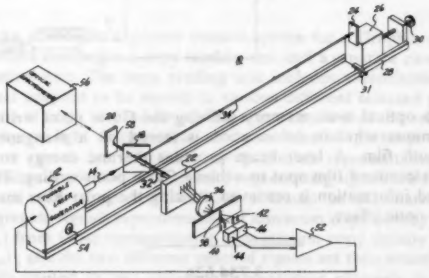
Method and apparatus for photometrically testing for a constituent of a droplet of a discrete liquid sample having an arcuate surface and having a planar surface resting on or suspended from a surface and wherein light rays from a source are directed into the droplet through the planar surface thereof. Light energy as a measure of absorbance, light scattering or fluorescence is transmitted through the planar droplet surface to a photodetector for analysis of the sample which analysis may be qualitative or quantitative or indicate an end reaction. Such analysis may be automated.

3,734,623

INTERFEROMETER UTILIZING A TUNABLE LASER OR SIMILAR FREQUENCY VARIABLE WAVE ENERGY GENERATOR

William G. Wolber, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1972, Ser. No. 230,764
Int. Cl. G01b *9/02*
U.S. Cl. 356—110 **8 Claims**



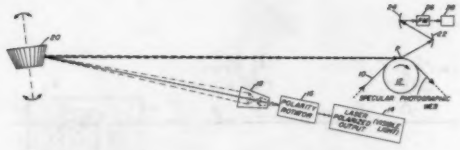
An interferometer having a frequency tunable laser generator for reflecting laser light from a movable mirror to provide an optical interference fringe pattern. A servo circuit, that includes detectors for receiving the optic fringe pattern and providing output signals whenever any displacement of the movable mirror causes the fringes to begin moving, automatically adjusts the frequency of the laser light signal to maintain the fringes in a fixed position. The direction and magnitude of the frequency variation of the laser signal required to hold the fringes in a fixed position is measured to determine the direction and magnitude of mirror displacement.

3,734,624

APPARATUS USING REFLECTED POLARIZED LIGHT TO INSPECT A MOVING WEB

Edward C. Cornelius, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1971, Ser. No. 140,932
Int. Cl. G03b 27/04
U.S. Cl. 356—118 6 Claims



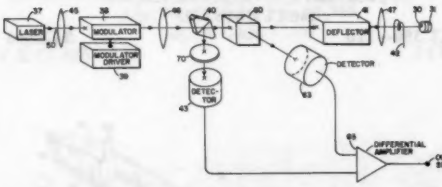
In an inspection system for detecting defects in the photosensitive surface of photographic material, laser means grazes visible light off the photosensitive surfaces of photographic material. The light is swept rapidly across the surface of the photosensitive material; and such light is polarized so that its plane of polarization is perpendicular to its plane of incidence. The special polarization, together with the rapid sweeping of the light across the photosensitive surface, prevents the photosensitive surface from producing latent images.

3,734,625

READOUT SYSTEM FOR A MAGNETO-OPTIC MEMORY

Roger L. Aagard, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 857,308, Sept. 12, 1969, Pat. No. 3,631,415. This application Dec. 23, 1971, Ser. No. 211,540
Int. Cl. G01n 21/40
U.S. Cl. 356—118 2 Claims



An optical mass memory utilizing the Curie point writing technique wherein information is stored on a manganese bismuth film. A laser beam provides thermal energy to a predetermined film spot to achieve Curie point writing. The stored information is retrieved utilizing the polar Kerr magneto-optic effect.

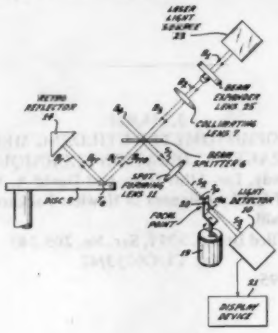
3,734,626

LIGHT APPARATUS FOR TESTING SURFACES

Donald Lee Roberts, Cypress, and David John George, Westlake Village, both of Calif., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 14, 1972, Ser. No. 217,755
Int. Cl. G01b 11/30
U.S. Cl. 356—120 10 Claims

Apparatus for testing surface flatness of an object such as a magnetic disc. A laser light beam is reflected off the surface to be tested, is caught and returned by a corner cube reflector so that the returning rays are directed parallel to the incoming beam and are again reflected off of the same spot area receiving the incoming laser beam. The light returning from the corner cube reflector is then reflected from the surface to be tested onto a beam splitter from which it is reflected to a spot-forming lens which forms a light spot at the focal plane, and which light spot diameter is a measure of the surface irregularity of the area tested on the disc or object. The position of the light spot always remains stably at the same point. If the tested area of the disc were perfectly flat when the light spot at the principal focal plane would be of a minimum diameter.



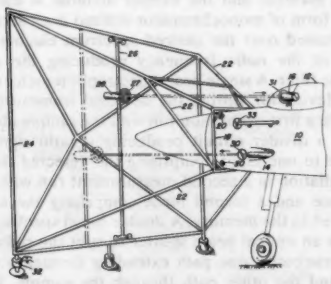
Any enlargement from this minimum diameter is a measure of surface irregularity of the disc or object surface being tested. Means are provided for scanning the size of the light spot which is also made independent of the angular plane or level of the disc tested. Light detection means working in conjunction with an aperture scanning means provide a display showing the amount of deviation from flatness of the surface area tested. The sensitivity of the apparatus is such that it can easily detect surface deviations at least 35 micro-inches per inch per inch from flatness.

3,734,627

LASER BORESIGHT KIT AND METHOD OF ALIGNMENT

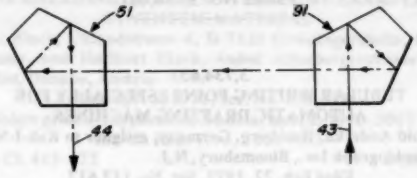
William R. Edwards, California, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 6,097, Jan. 27, 1970, abandoned. This application Nov. 29, 1971, Ser. No. 202,954
Int. Cl. G01b 11/26
U.S. Cl. 356—153 8 Claims



Apparatus for accurately aligning aircraft guns using a laser. In one instance a laser is mounted in a gun barrel and a laser beam is used to locate a reference point used in determining the adjustments needed in aligning the guns with respect to the gunsight. Another form of the invention uses a pentaprism and a modified pentaprism on a boresight board in conjunction with a laser beam for emitting parallel beams used in sighting in the guns. Another form of the invention is a laser adjustably mounted on a frame and positioned in front of the airplane whose guns are being boresighted, until the frame is perpen-

dicular to the ADL (Armament Datum Line). The laser is correctly positioned on the frame according to boresight data and



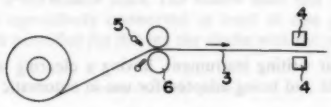
then the guns are moved to bring the reflected light beam into coincidence with the set position of the laser.

3,734,628

METHOD AND APPARATUS FOR DETECTING SURFACE DEFECTS OF MOVING BODIES

Katsumi Michishita; Yuji Okami, and Tokumatsu Emura, all of Kawasaki-shi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1971, Ser. No. 198,317
Int. Cl. G01n *21/16, 21/32*
U.S. Cl. 356—200 **9 Claims**



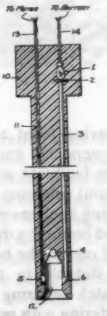
In a method of detecting a surface defect of a moving body deposited with non-uniformly distributed oil films wherein the surface of the moving body is scanned with light, the light reflected by the surface is converted into an electrical signal, and the electrical signal exceeding a predetermined level is derived out as a defect signal the improvement wherein, a scanning light of a wavelength having a high transmissibility for the oil film is formed, a uniform film of the oil is applied on the surface of the moving body, and the surface coated with the uniform thickness of oil film is scanned with the high transmissibility scanning light.

3,734,629

INSTRUMENT FOR DETERMINING THE OPTICAL DENSITY OF FLUIDS

Victor Sidney Griffiths, 21 Symonds Lane, Guildford, and Roynon Howes, 1 Strathaven Close, Linton, both of England

Filed June 22, 1971, Ser. No. 155,507
Claims priority, application Great Britain, June 26, 1970, 31,006/70
Int. Cl. G01n *21/22, 21/26*
U.S. Cl. 356—201 **7 Claims**



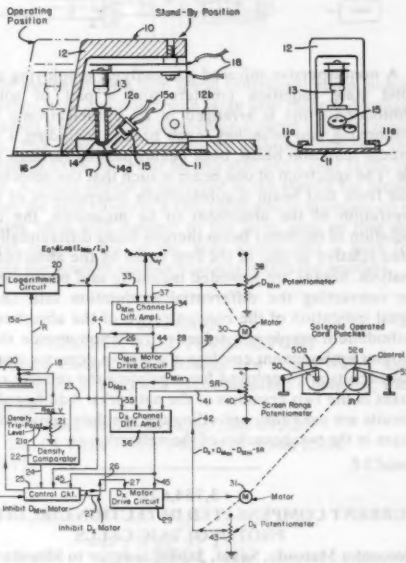
A rod or tube made of an inert material into a part of which the fluid to be tested can enter and in which are embedded a light source and a photo-electric cell arranged so that light from the source passes through the fluid and actuates the cell.

3,734,630

COPY DENSITY READING AND EXPOSURE CONTROL SYSTEM

Walter L. McIntosh, Woodbridge, and Dale M. Schmidt, Annandale, both of Va., assignors to Log Etronics Inc., Springfield, Va.

Filed Sept. 9, 1971, Ser. No. 179,080
Int. Cl. G01b *9/02*
U.S. Cl. 356—203 **13 Claims**

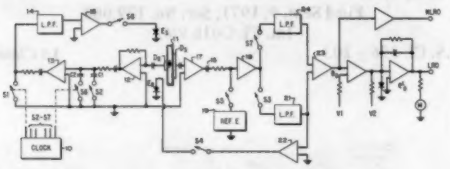


An automatic exposure control system for a Graphic Arts camera comprises a copy reading unit and a separate camera control unit. The copy reading unit includes a densitometer head adapted to be moved to various different selected portions of copy to produce signals representative of the reflectivity or light transmission of those selected portions; and these signals are converted into potentials representative of density. The levels of the density-representing signals are compared with a pre-set threshold potential to automatically segregate signals representative of minimum copy density (D^-_{min}) from those representative of maximum copy density (D^-_{max}); and the two different types of signals are then automatically routed to two different peak-reading channels in the copy reading unit operative to retain the lowest D_{min} encountered, and also operative to compute and retain, from D_{min}, D_{max}, and screen range, the highest excess density (D_X) encountered. The D_{min} and D_X parameters can be represented by potentials on potentiometers forming portions of null-seeking servomechanisms, and can also be recorded on a control card. The control card can be transferred, along with an associated piece of copy, to a camera control unit responsive to the recorded information and operative to reestablish the potentials D_X and D_{min}; and these reestablished potentials are then used to compute and control the main, bump (or no-screen), and flash exposures.

3,734,631
NONDISPERSIVE INFRARED GAS ANALYZER EMPLOYING SOLID STATE EMITTERS AND PHOTODETECTORS

Gregory Justice, Mountain View, and Egon E. Loebner, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1971, Ser. No. 147,788
Int. Cl. G01n *21/22, 21/34*
U.S. Cl. 356—205 **16 Claims**

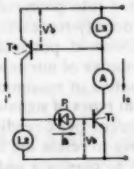


A nondispersive infrared gas analyzer employing a pair of solid state radiation emitters and a pair of solid state photoconductors is arranged in an optoelectronic network comprising two branches, each branch including a separate optical radiation beam, both beams passing through the sample. The spectrum of one beam is such that the detected radiation from that beam is substantially independent of the concentration of the absorbent to be measured, the detected radiation of the other beam thereby being differentially modulated relative to that of the first beam by the absorbent under analysis. Means are provided including said photoconductors for converting the differential modulation into an output signal indication of the concentration of the absorbents. One embodiment employs a selective radiation source stage and another embodiment employs a selective detector stage. Control circuits are employed for regulating the relative radiation fluxes in the two branches of the networks. Additional control circuits are used for controlling the absolute amplitude of the fluxes in the two branches of the network.

3,734,632
CURRENT COMPENSATED DETECTION CIRCUITS FOR PHOTOVOLTAIC CELLS

Motonobu Matsuda, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Oct. 29, 1971, Ser. No. 193,817
Claims priority, application Japan, Oct. 31, 1970, 45/96209; Aug. 12, 1971, 46/60604
Int. Cl. G01j *1/44*
U.S. Cl. 356—226 **9 Claims**



A circuit for detecting current generated by a light transducer such as a photovoltaic cell includes at least one P-N junction for biasing a transistor to compensate for the voltage drop of the base emitter junction thereof and includes feedback between the collector of the transistor and the biasing junction to compensate for temperature changes and changes in the amplification factor of the transistor whereby the linearity of the light transducer output is maintained.

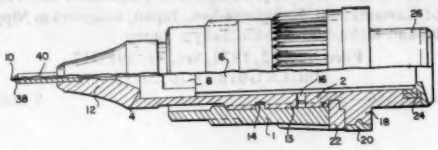
ERRATUM

For Class 356—246 see:
Patent No. 3,734,601

3,734,633
TUBULAR WRITING POINT ESPECIALLY FOR AUTOMATIC DRAFTING MACHINES

Gerold Anderka, Hamburg, Germany, assignor to Koh-I-Noor Rapidograph Inc., Bloomsbury, N.J.

Filed Feb. 22, 1971, Ser. No. 117,617
Claims priority, application Germany, Mar. 5, 1970, P 20 10 355.3; Apr. 30, 1970, P 20 21 153.4
Int. Cl. B43k *1/10*
U.S. Cl. 401—259 **12 Claims**

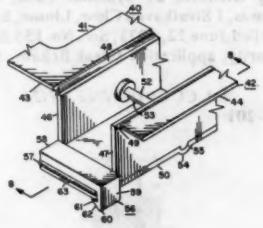


A tubular writing instrument, having a clearing wire with drop weight and being adapted for use in automatic drafting machines.

3,734,634
LOOSE LEAF BINDER

William M. Fenston, 936 Fairview St., Shreveport, La.

Continuation-in-part of Ser. No. 747,765, July 12, 1968, abandoned. This application June 5, 1970, Ser. No. 43,909
Int. Cl. B42f *3/00*
U.S. Cl. 402—56 **4 Claims**



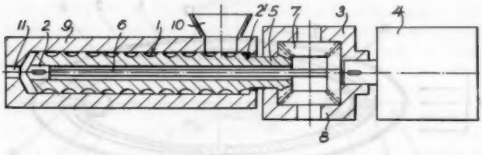
A looseleaf binder having front and rear covers slidably connected so that the covers may undergo limited movement relative to each other to facilitate access to the sheets confined therebetween without releasing said sheets, said covers having angular overlapping back members carrying mounting means for said sheets, and confining means comprising a channel at least at one end of one of the back members, means on one of said members slidable in the channel, a flexible detachable or hinged latch securing said back members to each other without interfering with relative movement of said covers; and means preventing endwise displacement of the slidable means from the channel.

3,734,635

SHAFT IN PARTICULAR SCREW SHAFT FOR FEEDING OR KNEADING OF RAW MATERIAL, BY EXAMPLE SYNTHETIC MATERIAL

Josef Blach, Uhlandstrasse 4, D 7121 Grossingersheim, Germany, and Heribert Blach, Auhof Altenbergerstrasse 69, Linz, Danube, Austria

Filed Apr. 1, 1971, Ser. No. 130,373
Claims priority, application Austria, Apr. 2, 1970, 3007
Int. Cl. F01c *1/16*; F01d *1/02*
U.S. Cl. 415—72 4 Claims



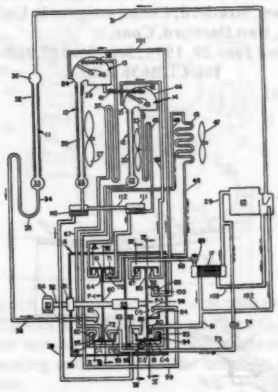
A shaft, in particular a worm shaft for conveying or kneading of raw material, for example synthetic material, which comprises a hollow shaft and at least one coaxial shaft disposed in the hollow shaft. The hollow shaft and the coaxial shaft are operatively connected at least at one point, and means are provided for driving the shafts with the same angular speed.

3,734,636

ROTARY PUMP FOR HEATING AND COOLING SYSTEM

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 20,772, March 18, 1970, Pat. No. 3,608,628. This application May 27, 1971, Ser. No. 147,492
Int. Cl. F04d *1/12*; F04b *35/04*
U.S. Cl. 415—88 3 Claims



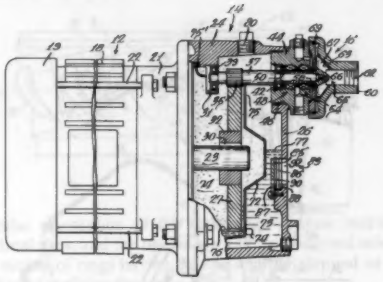
An absorption refrigeration system having a cooling and a heating mode of operation. A generator, an air-cooled condenser, a two-stage air-cooled absorber, a two-stage adiabatic evaporator and an air conditioning heat exchanger are connected to provide cooling. A heating mode of operation is provided wherein absorbent solution is heated in the generator and passed through the heat exchanger back to the generator to supply heat to a space being conditioned. The system embodies a plural trough solution scoop pump and a plural trough refrigerant or chilled water scoop pump mounted on a single shaft and driven by a single reversible motor to effect a change from cooling to heating and return.

3,734,637

CENTRIFUGAL PUMP

Richard Beck, Jr., Denver, Colo., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 13, 1971, Ser. No. 143,138
Int. Cl. F01d *15/12*; F01m *11/00*
U.S. Cl. 415—122 R 10 Claims



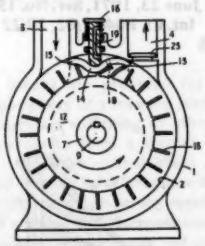
A speed increaser for a high speed centrifugal pump including a gearbox with a motor driven large gear therein drivingly interengaging a small pinion formed on a pump impeller rotating shaft. The gearbox is divided by a shroud adjacent the gears defining an oil reservoir on one side and a gear cavity on the other. A bleed orifice is provided in the shroud for bleeding oil into the gear cavity at a rate sufficient to maintain oil at a skimming level with respect to the large gear so that the large gear splashes oil in the gear cavity into a mist for lubricating the gears in various bearings within the gearbox.

3,734,638

FLEXIBLE VANE TURBINE PUMP

Vivan Richard Ebsary, Palm Beach, New South Wales, Australia, assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 6, 1970, Ser. No. 87,456
Int. Cl. F01d *17/12*; F03b *3/12*; F04d *15/00*
U.S. Cl. 415—141 5 Claims



A turbine pump comprising an internally cylindrical case having an annular pump chamber therein, an inlet and outlet in the case communicating with the pump chamber, a rotor drive shaft extending axially into the case, an impeller on the drive shaft incorporating flow vanes made of an elastomeric material.

3,734,639

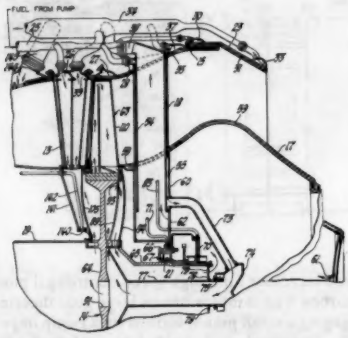
TURBINE COOLING

Frederick R. Short, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1968, Ser. No. 701,815
Int. Cl. F01b *3/22*
U.S. Cl. 415—114 7 Claims

A gas turbine engine in which the hotter parts of the engine are cooled by circulation of a cold fuel. The fuel cools parts of

the combustion chamber wall, the exhaust duct, the struts which extend across the exhaust duct, and the nozzle vanes and turbine wheel, including the turbine blades. This is a regenerative cooling system, since the heat imparted to the fuel is recovered in the combustion and expansion processes. The turbine wheel cooling embodies a circuit in which cold



fuel flows radially outward of both faces of the turbine wheel, radially outward in the leading portion of the turbine blades, radially inward in the trailing portion of the turbine blades, and radially inward behind the turbine wheel to the coolant outlet. Preferably the fluid is vaporized in effecting the cooling.

3,734,640

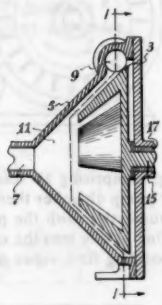
AIRFOIL VACUUM PUMP WITH TAPERED ROTOR

William H. Daniel, 541 Putman Road, Rogers, Ark.

Filed June 23, 1971, Ser. No. 155,766

Int. Cl. F04d *7/02, 29/22*

U.S. Cl. 415—213 **10 Claims**



An airfoil vacuum pump of the centrifugal type has a rotor disposed in a conical housing. The rotor has vanes that taper radially inwardly away from the rotor toward the axial inlet of the pump. The leading and trailing edges of the vanes converge in a direction toward the inlet, and the thickness of the vanes decreases in that direction.

3,734,641

AERODYNAMIC OR HYDRODYNAMIC ELEMENT, SUCH AS A WING OR A BLADE

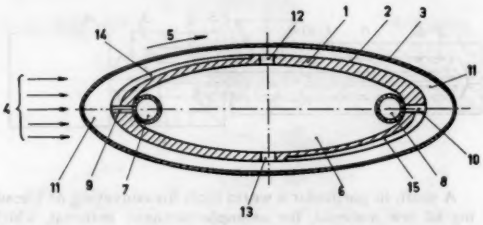
Gilles Gerardus Hirs, Pijnacker, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurweten-Schappelijk Onderzoek Ten Behove Van Nijverheid, Handel & Verkeer, The Hague, Netherlands

Filed May 28, 1971, Ser. No. 147,860

Claims priority, application Netherlands, May 29, 1970, 7007868

Int. Cl. B63h *9/02*

U.S. Cl. 416—4 **6 Claims**



Wings, blades and such aerodynamic and hydrodynamic elements, which are profiled to experience in a stream of a gas or a liquid a transverse force and which are provided with a moving surface constituted by a rotating belt of flexible material to benefit from the Magnus-effect and thus to increase efficiency, are improved by running the belt on a profiled body instead of on rollers. The belt is supported by a film of lubricant which is supplied through holes and distributed by grooves in the body, in such an arrangement that the lubricant flow not only supports the belt but also maintains its rotation.

3,734,642

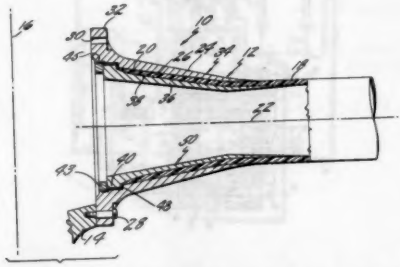
AERODYNAMIC BLADE ROOT END ATTACHMENT

Thomas P. Dixon, Stratford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 29, 1971, Ser. No. 157,968

Int. Cl. B63h *1/20*

U.S. Cl. 416—61 **25 Claims**



The structural spar of an aerodynamic blade, preferably made of a composite material, is connected to the rotor hub through a primary connecting cuff to which the spar is bonded, and which normally constitutes the sole load path, and redundantly through a secondary cuff which is also bonded to the spar and which is normally unloaded and becomes loaded only upon failure of the bond between the spar and the primary cuff, which failure during operation causes position shifting of the spar and secondary cuff to thereby establish a malfunction warning vibration to the pilot.

3,734,643

KITCHEN MIXER IMPELLER AND MOLD FOR MAKING

Gus Waldemar Wallin, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed June 1, 1971, Ser. No. 148,339
Int. Cl. B01f 7/24
U.S. Cl. 416—77 4 Claims

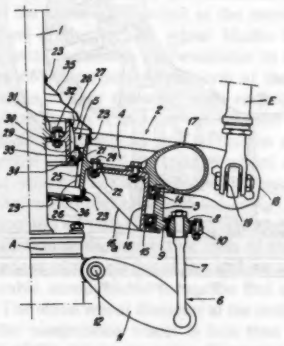
An integral impeller having equally spaced blades and a two-piece mold for making it. The impeller is cast by rotating all blades slightly with respect to the mold parting plane and a plane perpendicular to the parting plane.

3,734,644

HELICOPTER ROTOR PITCH CONTROL SYSTEM

Jean-Claude Garcia, Pelissanne Bouches-du-Rhone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Dec. 13, 1971, Ser. No. 207,043
Claims priority, application France, Dec. 14, 1970, 7044937
Int. Cl. B64c 27/72
U.S. Cl. 416—114 4 Claims



A blade pitch control assembly in accordance with the invention comprises an inner disc rotating with the rotor shaft and an outer non-rotating connected connected to the first disc by a bearing and which can be tilted by pitch variation control means.

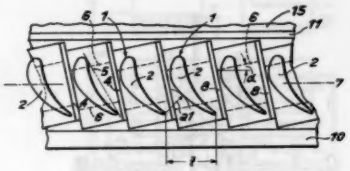
3,734,645

TURBINE BLADE ASSEMBLY

Rene Strub, Winterthur, Switzerland, assignor to Brown Boveri-Suezer Turbomachinery Limited, Zurich, Switzerland

Filed Dec. 11, 1970, Ser. No. 97,105
Claims priority, application Switzerland, Dec. 12, 1969, 18500/69
Int. Cl. F01d 5/30
U.S. Cl. 416—214 4 Claims

The blades of a blade row in a turbine or similar machine possess roots having two pairs of opposite faces and are disposed in an annular array with the help of wedge-shaped spacers between the roots of adjacent blades. The blade root faces of one of these pairs define at each axial end of the array an annular stepped or sawtooth-shaped surface, according to



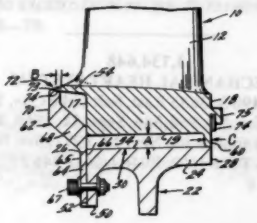
the angular orientation of the blades about their individual longitudinal axes, and the blades are held in a selected orientation by means of rings having mating annular stepped or sawtooth-shaped surfaces thereon.

3,734,646

BLADE FASTENING MEANS

Alan Vincent Perkins, West Peabody, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Feb. 2, 1972, Ser. No. 222,847
Int. Cl. F01d 5/32
U.S. Cl. 416—220 6 Claims



Blade fastening means are provided for securing airfoil blades around the periphery of a rotating member wherein the blades include contiguous stiffening or vibration dampening means which cooperate to form a shroud intermediate the ends of the blades. Each individual blade member may be removed or inserted without interference with the contiguous airfoil stiffening or vibration dampening means of the adjacent blade member and without the interposition of an individual spacer element between the blade root and groove.

3,734,647

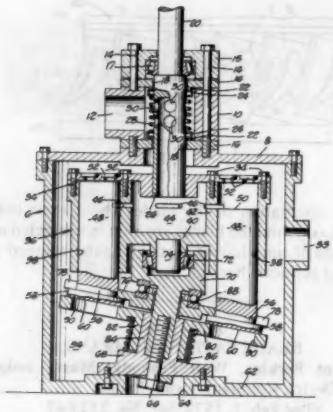
COMPRESSOR PUMP

Charles L. Sparks, deceased, late of 44426 Third St. East, Lancaster, Calif. (by Florence J. Sparks, executrix)

Filed Sept. 7, 1971, Ser. No. 178,294
Int. Cl. F04b 49/00
U.S. Cl. 417—269 9 Claims

A compressor pump or the like including a cylinder and piston assembly and a pressure chamber, the cylinder having an inlet and having an outlet in communication with the pressure chamber, the piston having a working face in the cylinder and having a pressure face exteriorly of the cylinder, cam means engaging the pressure face of the piston whereby relative rotation between the cylinder and piston as a unit and the cam plate causes reciprocation of the piston and compression

of gases in the cylinder and also in the pressure chamber, the cam plate, during the compression stroke of the piston, exposing the pressure face of the piston to pressure chamber pressures to provide added power in the compression stroke of the piston, the pressure face of the piston being relieved of pressure chamber pressures during the intake stroke of the piston.



3,734,648

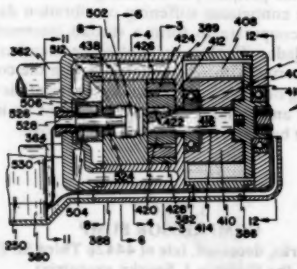
MECHANICAL HEART SYSTEM

Jay P. Nielson, 3490 S. 3685 East, Salt Lake City, Utah

Division of Ser. No. 860,546, Sept. 24, 1969, Pat. No. 3,636,570. This application Nov. 12, 1971, Ser. No. 198,182

Int. Cl. F01c *1/10*; **F04c** *1/06*; **F04b** *21/00*

U.S. Cl. 417—310 **4 Claims**



A mechanical heart system including an artificial heart having a rigid exterior casing which is partitioned into two halves, each half being divided into chambers by a flexible diaphragm which collapses to pump blood out of the artificial heart when subjected to fluid pressure and which expands to withdraw blood into the artificial heart when the fluid pressure is removed therefrom. A mechanical driving pump forces driving fluid into and withdraws driving fluid from the artificial heart to control the operation of the diaphragm, the pump (a) forcing driving fluid into the artificial heart at a rate which is greater than the withdrawal of driving fluid from the artificial heart and (b) providing a more uniform rate of fluid flow between the pump and the artificial heart and modulating the transition between injection and withdrawal of driving fluid from the artificial heart. A pump regulator is connected to the power input of the mechanical pump, the regulator responding to the breathing rate of the user of the system to control the power input to the mechanical pump whereby the breathing rate of the user will determine the rate at which blood pumps from the artificial heart. In an alternative preferred embodiment, a fluid pump is substituted for the mechanical heart pump, the fluid pump accommodating injection of driving fluid into the artificial heart at a relatively constant rate and withdrawal of driving fluid from the artificial heart at another relatively constant rate. An alternate heart embodiment includes fluid-receiving cylinders and displaceable pistons alternately reciprocated in the cylinders due to fluid pressure developed by the fluid pump. An accumulator associated with the cylinders allows the pistons to travel in one direction at one rate and in the other direction at another rate.

3,734,649

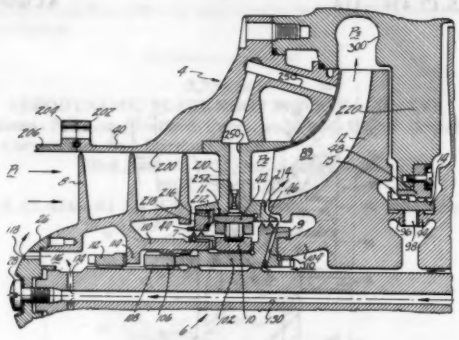
TURBOPUMP HAVING COOLED SHAFT

James J. Sandy, Jr., Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 24, 1971, Ser. No. 146,333

Int. Cl. F04b *17/00*

U.S. Cl. 417—370 **10 Claims**



A turbopump having an inducer and a two stage centrifugal pump has hydrogen entering an inducer and passing through a first stage impeller and a second stage stage impeller to the exit thereof. A turbine is located on the opposite side of said impellers from the inducer and has an integral shaft extending through the impellers and inducer on which they are mounted. A front radial bearing means is positioned between the inducer and first impeller and a thrust balancer means and rear radial bearing means are positioned between the second impeller and the turbine. An interstage seal extends between the two impellers. Hydrogen is taken from the hydrogen path to operate the axial thrust bearing and to cool the two radial bearings.

Further, the hydrogen flow is taken from the inlet to the second stage impeller and directed through the shaft having a tortuous path therethrough to provide a desired cooling action. Dead air spaces are provided adjacent the turbine mounting to aid in the formation of a heat transfer barrier.

3,734,650

EXHAUST-GAS DRIVEN TURBOCHARGERS

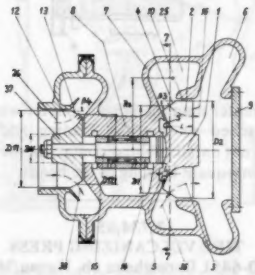
Josef Reisacher; Hans Joachim Klaue, both of Frankenthal, and Dieter Bergmeier, Heidelberg, all of Germany, assignors to Aktiengesellschaft Kuhnle, Kopp & Kausch, Frankenthal, Germany

Filed Apr. 30, 1971, Ser. No. 139,156

Claims priority, application Germany, May 2, 1970, P 20 21 601.7; Aug. 18, 1970, P 20 4 901.2; May 2, 1970, P 20 21 602.8

Int. Cl. F04b *17/04*

U.S. Cl. 417—407 16 Claims



An exhaust gas turbocharger for use in connection with internal combustion engines has a turbine wheel and a compressor wheel which are arranged on a common drive shaft. The turbine wheel is provided with guide blades structured to be traversed by gases diagonally from the outside (periphery) of the wheel toward the inside (center) thereof. The blades have inlet edges and outlet edges whereby the inlet edges are substantially inclined, so that an entering gas flow is directed substantially perpendicularly to each inlet edge when the same is projected in the meridian plane, the cross section of the turbine wheel blades being arranged radially in sectional planes perpendicular to the wheel axis. The blades of the turbine wheel form at the inlet edge an entrance angle of less than 90° with respect to the wheel axis. The turbine has a housing constructed to constitute a single-slow spiral casing for gas admission over the entire circumferential surface of the turbine wheel, at the entrance portions of which there are provided at least two exhaust gas conduits, which are joined in such a way that their inlet cross section to the spiral casing is only slightly larger than the cross section at the respective ends of the gas conduits. The inlet edges of the blades of the turbine wheel assume a most favorable aerodynamic formation and are streamlined in profile. The mean wheel diameter at the outlet edge of each blade of the compressor wheel is less than approximately 88 percent of the maximum outer diameter of the blades of the turbine wheel. The gas flow through the compressor wheel is diagonally directed for traversal of the wheel from the inside toward the outside thereof.

3,734,651

MAGNETICALLY DRIVEN PUMP FOR ABSORPTION REFRIGERATION SYSTEM

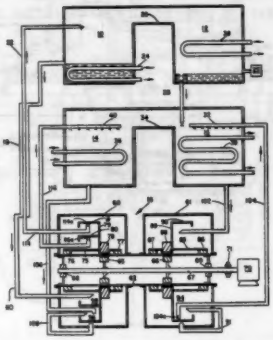
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 20,770, March 18, 1970, Pat. No. 3,608,330. This application Apr. 12, 1971, Ser. No. 133,053

Int. Cl. F04b *35/04;* F04d *1/12*

U.S. Cl. 417—420 2 Claims

An absorption refrigeration system having a generator, a condenser, an evaporator, an absorber, and a fluid transfer apparatus for pumping liquids in the system. The fluid transfer apparatus includes a plurality of spaced housings sealingly secured to the exterior surface of a cylindrical nonferromagnetic wall. One or more scoop pump pans are rotatably mounted within each of the housings for rotation about the nonferromagnetic wall. An annular magnetic coupling member is secured to the rotor member within each housing.



A second annular magnetic coupling member is mounted exteriorly of each housing in coupling relation with the annular magnet therein and is attached to an external electric motor to drive the scoop pump pans within the housings.

3,734,652

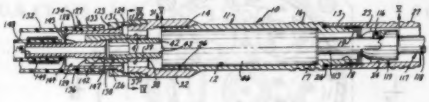
PNEUMATICALLY POWERED DEVICE

John E. Barnett, Kalamazoo, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Oct. 26, 1970, Ser. No. 84,071

Int. Cl. F01c *21/00;* F03c *3/00;* F04c *29/00*

U.S. Cl. 418—70 11 Claims



A pneumatically powered device for rotating, at a relatively high speed, a tool of the type used by a surgeon for performing an operation. A self-contained air motor is removably disposed within an elongated tubular housing easily held and manipulated by the hand of the surgeon and connected by swivel means to conduits through which a gas under pressure is delivered to and carried away from one end of the air motor. Coupling means extend from the other end of the air motor for connection to a tool, such as a drill bit.

3,734,653

SCREW COMPRESSOR

Soren E. H. Edstrom, and John E. Seckman, both of Quincy, Ill., assignors to Gardner-Denver, Quincy, Ill.

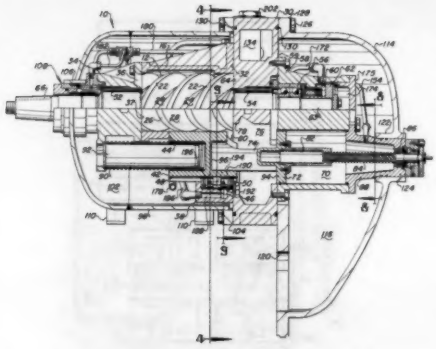
Filed Aug. 23, 1971, Ser. No. 173,895

Int. Cl. F01c *1/16, 21/04;* F04c *17/12*

U.S. Cl. 418—88 10 Claims

A liquid injected screw compressor having an intermediate housing member which supports a detachable screw rotor housing portion, a thrust bearing housing, and a pressure fluid control actuator for a sliding capacity control valve. The intermediate housing member also includes a cavity for distributing lubricating and cooling oil to the compressor. The screw compressor includes a substantially cylindrical casing fabricated of steel plate which is bolted to the intermediate housing member and encloses the screw rotor housing portion to serve as a pressure vessel for compressor inlet gas and for gas vented

by the capacity control valve. A separate casing portion is bolted to the intermediate housing member and encloses the

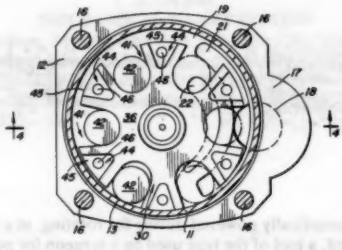


thrust bearing housing and the pressure fluid control actuator. The compressor is adapted to be mounted on a base or frame by means of legs attached to the cylindrical casing.

3,734,654
ROTARY ROLLER PUMPS

Thomas I. Burenga, Evanston, Ill., and Everett Elliott, Richland Center, Wis., assignors to TSC Industries Inc., Chicago, Ill.

Filed Mar. 29, 1971, Ser. No. 128,916
Int. Cl. F01c *21/00*; F03c *3/00*; F04c *15/00*
U.S. Cl. 418—152 **5 Claims**



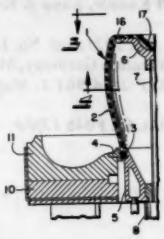
A rotary roller pump comprising a cylindrical pump chamber closed at both ends and having inlet and outlet openings into the chamber, a rotor eccentrically mounted in the pump chamber on a cantilever shaft, and a plurality of rollers located in longitudinal slots in the periphery of the rotor; the entire rotor is of molded plastic, keyed to the shaft. The periphery of the rotor, between roller slots, comprises a series of voids with central reinforcing ribs; apertures through the ribs equalize pressures on opposite sides of the rotor.

3,734,655
TIRE SHAPING AND CURING DEVICE

Armindo Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Nov. 1, 1971, Ser. No. 194,339
Int. Cl. B29h *5/02*
U.S. Cl. 425—33 **7 Claims**

A tire shaping device of the upstanding bladder type characterized in that support means for the upper end of the bladder is of non-circular form e.g., Y, cross, or regular polygon form with concavely curved sides, to cause uniform axial folding or pleating of the bladder when axially stretched to facilitate loading of a tire carcass thereover and stripping of the cured tire therefrom, the unstressed bladder being of barrel shape with a maximum diameter greater than the bead diameter of the tire and the crests or folds being of uniform spacing circumferentially around the bladder and being disposed at a

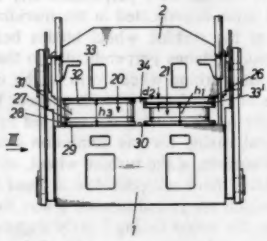


diameter no greater than the bead diameter when the bladder is axially stretched so that the loading and unloading as aforesaid does not entail rubbing contact of the tire beads and bladder and consequent kinking of the beads.

3,734,656
TIRE VULCANIZING PRESS

Walter Balle, D-6451 Dornigheim ub. Hanau/Main, Germany, assignor to Leonhard Herbert Maschinenfabrik, Bergen-Enkheim, Germany

Filed Dec. 1, 1971, Ser. No. 203,655
Claims priority, application Germany, Dec. 5, 1970, P 20 60 018.4
Int. Cl. B29h *5/02*
U.S. Cl. 425—34 **10 Claims**



In a tire vulcanizing press of the kind in which two side by side moulds are opened and closed simultaneously adjustment of the closing pressure is effected by the inclusion of shim plates in openings provided in connecting rods by which a top part of the press is reciprocated relative to a bottom part. The shim plates determine the positions in the openings of bearings by which the connecting rod is connected to the top press part. Adaptor plates can also be inserted between the moulds and one of the press parts for the purpose of adapting the press to accommodate moulds of different heights.

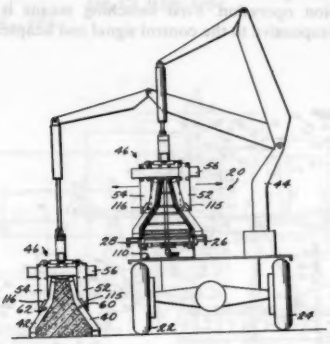
3,734,657
GANG FORM MOVER

Richard F. Reed, Salt Lake City, Utah, assignor to Pavement Planning Company, Salt Lake City, Utah

Int. Cl. B28b *13/06*
U.S. Cl. 425—62 **5 Claims**

An apparatus for cleaning and transporting one or more pairs of concrete barrier strip forms and a method of cleaning and transporting forms and forming barrier strips whereby one or more pairs of forms are peeled from the set concrete by a crane on a vehicle, lifted by the crane and then placed on a

pair of structural members on the vehicle which have mounted between them a dolly which moves on tracks along the members. A stationary standpipe having a number of nozzles and a rotatable stand pipe having a number of brushes attached to it are mounted on the dolly. Both stand pipes extend vertically into the space between the forms. To clean the forms, the



brushes are rotated and at the same time move along the forms with the brushes successively cleaning the interior surfaces of the forms. Oil is sprayed from the nozzles in the stationary standpipe, preferably after the dolly has moved the length of the forms and is returning. The forms can be transported at the same time they are being cleaned.

3,734,658

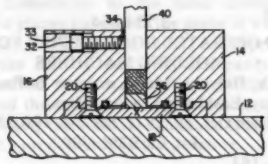
RAPID RELEASE MOLD

Phillip A. Livera, Bloomfield, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1971, Ser. No. 201,907

Int. Cl. B30b *11/00*

U.S. Cl. 425—78 **10 Claims**



A rapid release mold for use in the compaction of metal powders into consolidated ingots which includes a pair of side walls connected together by means of a relatively rigid bottom buckle plate. The mold includes means associated with the upper portions of the side walls which are operative to slightly increase the separation of the side walls through slight flexure of the buckle plate to permit the unimpeded removal of a compacted ingot from the mold.

3,734,659

DRIVE MEANS FOR MATERIAL COMPACTING APPARATUS

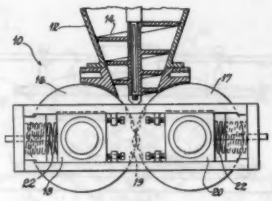
Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries Inc., Rosemont, Ill.

Continuation-in-part of Ser. No. 95,456, Dec. 7, 1970, Pat. No. 3,674,397. This application Feb. 16, 1972, Ser. No. 226,824

Int. Cl. B29c *3/02, 3/04, 3/06*

U.S. Cl. 425—145 **5 Claims**

A material compacting apparatus including opposed compacting rolls mounted for lateral displacement to vary the spacing between the rolls depending upon the pressure exerted during compacting. A hopper is positioned above the rolls for holding the material, and a feed screw is located within the hopper for feeding the material to the rolls. Control means are provided for varying the driving action of the feed screw with the variations depending upon any tendency of the



pressure applied by the rolls to vary. The feed screw is hydraulically or electrically driven and signals are applied to the drive means for varying the feed screw pressure. Variations in the driving force of the feed screw are designed to offset the forces tending to vary the spacing between the rolls whereby a constant roll spacing, and therefore a product of constant thickness can be achieved.

3,734,660

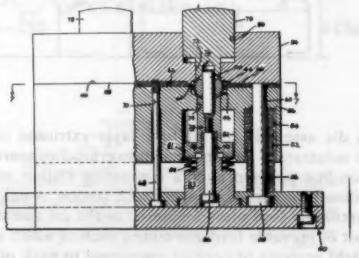
APPARATUS FOR FABRICATING A BEARING DEVICE

Gilbert E. Davies; Robert J. Loubier; John M. Weston, and Robert A. Muhn, all of Fort Wayne, Ind., assignors to Tuthill Pump Company, Chicago, Ill.

Division of Ser. No. 1,733, Jan. 9, 1970, Pat. No. 3,629,921. This application June 17, 1971, Ser. No. 153,988

Int. Cl. B29f *1/10*

U.S. Cl. 425—123 **9 Claims**

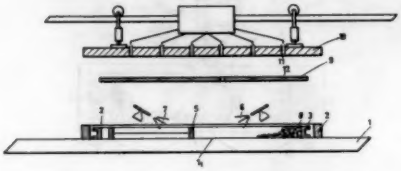


An apparatus for fabricating a bearing device comprising a housing having an opening therethrough, a ball-shaped swivel member positioned within the opening and spaced from the surface of the housing which defines the opening, and a raceway of solidified bearing material in the space between the swivel member and housing, the raceway having a swiveling clearance with and retaining said swivel member in the housing, the inner surface of the raceway being shaped to correspond to a part of an elongated sphere. In the fabrication of this bearing device, the swivel member is reciprocated relative to the housing during the hardening of liquefied bearing material injected into the space between the swivel member and housing. The apparatus which accomplishes this method includes relatively movable members which engage, respectively, the housing and the swivel member, these mold members providing the relative reciprocatory movement.

3,734,661
APPARATUS FOR THE CONTINUOUS MANUFACTURING OF CONSTRUCTION PANELS

Lucien Joly-Pottuz, and Jean-Claude Joly-Pottuz, both of 27 Rue Bellevue, Annemasse, France

Filed Oct. 19, 1970, Ser. No. 82,030
Int. Cl. B29c 6/00; B29d 27/00; B29f 1/06
U.S. Cl. 425—129 5 Claims

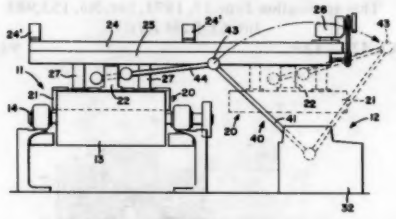


The invention relates to an apparatus for the continuous manufacture of panels that fit together, particularly intended for constructing prefabricated houses and industrial buildings.

3,734,662
FLAT FILM PLASTIC EXTRUSION APPARATUS

Paul E. Harmon, Fulton, and Kenneth A. Mainstone, Oswego, both of N.Y., assignors to The Black Clawson Company, Hamilton, Ohio

Filed Feb. 8, 1971, Ser. No. 113,310
Int. Cl. B29f 3/00, 3/04
U.S. Cl. 425—131 4 Claims



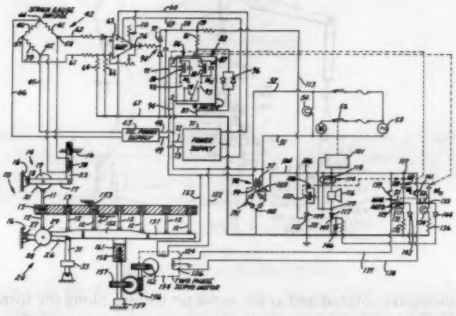
A die assembly for multiple layer extrusion onto a paper web substrate is movable on an overhead support beam from an on-line position over a laminating station to an off-line position transversely adjacent such station. A pair of stationary extruders feed plastic material to the die assembly through a pair of movable feed assemblies each of which includes two straight sections of conduit connected to each other by a rotary joint and connected to the extruder and to the die assembly by further rotary joints so that movement of the die assembly is enabled by a swinging and folding movement of the conduit sections. An improved die adapter is also disclosed for the simultaneous three-layer co-extrusion from the two extruders in which the film thicknesses of the outer layers are controlled with respect to the center layer.

3,734,663
ARMING CONTROL FOR SERVO-ADJUSTED TABLET COMPRESSING MACHINES

James P. Holm, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 16, 1971, Ser. No. 199,133
Int. Cl. B29b 5/06; B29c 3/06
U.S. Cl. 425—147 9 Claims

Compressing apparatus having die filling means adapted to fill a die with formable material, adjustable means for regulating the amount of formable material received in the die and force applying means for applying compressing force to the material within the die. Means are provided for measuring the force applied to the formable material within the die by the force applying means and producing a control signal which varies in proportion to said measured force which in turn indicates the degree to which the die was filled during a given compression operation. First switching means is provided which is responsive to the control signal and adapted to effect

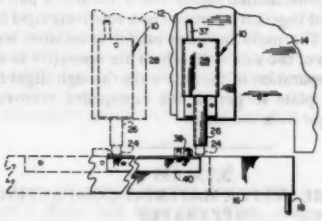


adjustment of the adjustable die filling means to control the weight and, therefore, the amount of formable material in each of the dies and thereby the force imparted to the formable material. A prearming circuit including second switching means is provided which is also responsive to the magnitude of said control signal to prevent the first switching means from being effective to effect adjustment of the adjustable die filling means during intervals of time when the magnitude of the signal is below the predefined threshold value.

3,734,664
SOLENOID OPERATED DOOR OPENER FOR PLASTIC MOLDING MACHINES

William Bosyk, Holyoke, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 19, 1971, Ser. No. 190,539
Int. Cl. B29f 1/00
U.S. Cl. 425—151 3 Claims

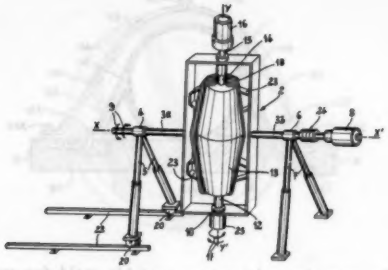


An automatically operable device for opening the sliding safety gate or door of a plastic injection molding machine whenever the die or mold halves of the machine are opened so that the machine operator can have ready access to the area between the mold halves.

3,734,665
ROTARY MOLDING MACHINE

Michel Pierre Cyrille Guillaud, Grenoble, France, assignor to Societe d'Etudes et de Construction de Materiel Electrique et Radioelectrique S.E.C.M.E.R. Chemin du Sablon La Tronche (Isere), France

Filed Mar. 9, 1971, Ser. No. 122,328
Int. Cl. B29c 5/04
U.S. Cl. 425—174 6 Claims



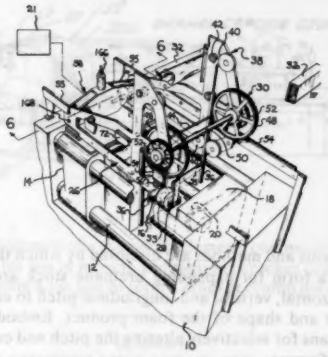
This rotary molding machine designed mainly for the rotary molding of synthetic materials is also adapted to mix in a heated vessel a plurality of liquid, solid or pulverulent substances for carrying out certain heat treatments or chemical treatment by heat action, and comprises a frame structure adapted to be rotatably driven about a first transverse axis and provided with means for rotatably driving a mold about its axis, or a detachable vessel containing the material to be molded about a second axis coplanar and perpendicular to said first axis, said mold or vessel consisting of a relatively thin material adapted to be induction heated, the heating means proper consisting of an induction coil connected to a low-frequency a.c. source and secured to said frame structure, said coil consisting of connectors wound to form contiguous turns about an axis orthogonal to said first and second axes of rotation of said mold, so as to constitute a kind of sheath having a configuration homothetic to the mold configuration and bounded by two planes parallel to the plane in which the mold axes are located, whereby the mold, by approaching very closely the inner face of said coil, can easily be engaged therein or removed therefrom, and nevertheless be heated very rapidly and throughout its wall to a homogeneous temperature for melting the material contained therein or keeping said material at a predetermined temperature.

3,734,666
PART REMOVAL APPARATUS

Paul R. Guest, and Robert F. Kontz, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 846,087, July 30, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 135,926
Int. Cl. B29c 7/00, 1/14; B29f 1/14
U.S. Cl. 425—186 5 Claims

Part removal apparatus for removing and discharging in an oriented position parts formed on machines having reciprocating platens, such as plastic molding machines, for example. Relative movement between the platens of the machine is employed to mechanically drive a part holding element between the separating platens to position a part receiving holder in adjacent position to a freshly formed part which is retained on one of the machine platens. The part is transferred to the holder by the application of vacuum to the holder which then sucks the part into the holder and retains the part on the holder temporarily. The holder is mechanically driven by closing movement of the platens to retract clear of the platens and to thus carry the part into operative alignment with a discharge chute. As the holder arrives in operative alignment with the discharge chute, a pressure source is connected to the holder and to the chute, the application of pressure to the

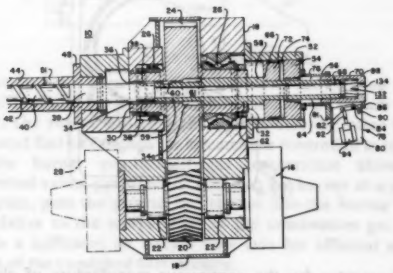


holder blowing the part clear of the holder into the discharge chute, while the application of pressure to the discharge chute blows the freshly received part from the discharge chute into a stationary chute located to be in alignment with the discharge chute at this particular moment.

3,734,667
PLASTIC EXTRUSION APPARATUS

Robert F. Dray, New Castle, Pa., assignor to Extruders, Inc., New Castle, Pa.

Filed Sept. 30, 1970, Ser. No. 76,698
Int. Cl. B29f 3/06, 3/01
U.S. Cl. 425—190 2 Claims



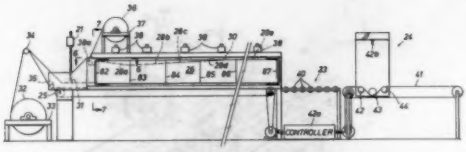
A plastic extrusion apparatus of the type employing a rotatable screw mounted in an elongated tubular member and including pressures fluid operated piston means operably connected to the screw for applying a compressive axial force to the screw in a direction toward the discharge port of the extrusion apparatus. The apparatus further includes means operably connected to the piston means for ejecting the screw from the tubular member upon reciprocation of the piston means.

3,734,668

APPARATUS FOR FORMING URETHANE FOAM STOCK

Lawrence C. Porter, Palos Verdes Penninsula, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 18, 1970, Ser. No. 90,562
Int. Cl. B29d *27/04*
U.S. Cl. 425—330 15 Claims



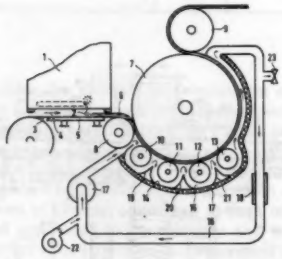
Apparatus and methods are disclosed by which the wall surfaces of a form for expanding urethane stock are provided with horizontal, vertical and longitudinal pitch to enhance the character and shape of the foam product. Embodiments include means for selectively altering the pitch and curvature of a wall surface.

3,734,669

APPARATUS FOR CONTINUOUS MANUFACTURE OF CHIPBOARD

Hubert Ettel, Harz, Germany, assignor to Wilhelm Mende & Co., Harz, Germany

Filed Oct. 26, 1971, Ser. No. 192,373
Claims priority, application Germany, Oct. 30, 1970, P 20 53 351.1
Int. Cl. B29j *5/08*; B30b *5/04*
U.S. Cl. 425—373 7 Claims



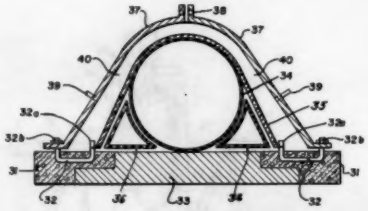
Apparatus for the continuous manufacture of chipboard comprising an endless steel band encircling a portion of the circumference of a drum and adapted to press and cure the chip material and which includes hot gas heating means for heating the chip material through the steel belt. The heating means comprises a sheet metal housing surrounding the portion of the belt which runs against the drum, an oil heater for discharging hot air and exhaust gas into said housing and a recirculating duct for carrying the discharged gases back to the point where the fresh gases enter the housing. The sheet metal housing may be of a configuration to direct the gases flowing through the housing into a tortuous path to promote heat transfer.

3,734,670

PORTABLE MOLD FOR ERECTING CONCRETE OR PLASTIC SHELTERS

Charles W. Stickler, Jr., R.D. No. 4, Mohnton, Pa.

Filed Mar. 3, 1970, Ser. No. 16,109
Int. Cl. B28b *3/00, 7/32*
U.S. Cl. 425—405 H 5 Claims



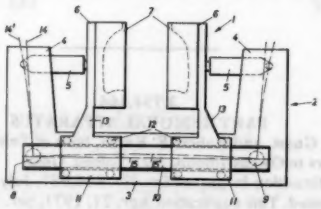
The invention relates to a portable mold for erecting a poured concrete or plastic structure for use as a shelter or storage building. An inside inflatable form is used to develop an internal countour and supply a compressive force against a poured cement mix sandwiched between the inflatable form and an outside rigid form of determined contour, such as a quonset hut. The inflatable inner form can be removed after exhausting the compressed air from its confined area and may be reused.

3,734,671

MOLD CLOSING UNIT

Johann Talasz, 7920 Heidenheim, Germany, assignor to J. M. Voit GmbH, Heidenheim (Brenz), Germany

Filed Sept. 20, 1971, Ser. No. 182,057
Claims priority, application Germany, Oct. 1, 1970, P 20 48 258.0
Int. Cl. B29c *1/16*
U.S. Cl. 425—450 5 Claims



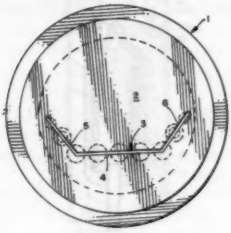
A mold closing unit has a substantially U-shaped frame with a pair of guide rails positioned on both sides of the cross member of the frame and having their ends pivotally mounted to the frame below the arms thereof. A pair of mold supports are slideably mounted on said guide rails for movement toward and from each other between the arms of the frame. Closing and blowing forces are absorbed by the frame and deformations in the frame resulting from these forces do not misalign the mold halves which are mounted on the guide rails.

3,734,672

EXTRUSION DIE FOR DOUGH

Elmer F. Glabe, Chicago; Perry W. Anderson, Niles, and Stergois Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 189,936
Int. Cl. A21c *3/00*; A23p *1/00*
U.S. Cl. 425—462 4 Claims



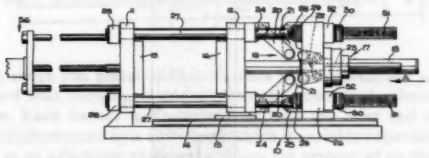
An extrusion die is provided for extruding a cup-shaped shell made from a dough, more specifically a simulated potato skin which is used to make a simulated stuffed baked potato.

3,734,673

DIE CASTING AND LIKE APPARATUS

Alan Hunter Paterson, Droitwich, County of Worcester; Thomas Matthew Ewale, Bromyard, County of Hereford, and John Samuel Rogers, Bromsgrove, County of Worcester, all of England, assignors to Metal Castings Doehler Limited, Worcester, England

Filed Mar. 30, 1971, Ser. No. 129,397
Claims priority, application Great Britain, Apr. 4, 1970, 16,052/70
Int. Cl. B22d *17/10*
U.S. Cl. 425—450 8 Claims



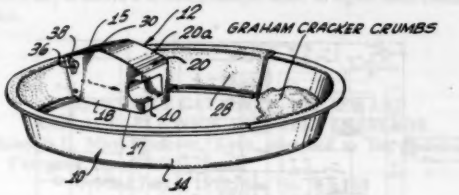
In die casting, injection moulding or like apparatus having tie bars which are subjected to tensile stress when die carrying members are moved to a die-closed position, a respective liquid-filled chamber is interposed in the stress path through each tie bar. The chambers have movable wall parts so arranged that the pressure of fluid in the chamber varies as the tension in the associated tie bar, and the chambers are interconnected to equalize pressures therein and therefore to equalize tensions in the tie bars. The chambers may also communicate with pressure relief means such as a pressure relief valve, a reservoir pressurized by a gas, or a solid state resilient element which can yield to provide a local increase in the space available for accommodation of the liquid.

3,734,674

IMPLEMENT FOR FORMING PIE CRUST

Doty M. Steele, 1615 N. Edgemont St., Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,065
Int. Cl. A47j *43/00*
U.S. Cl. 425—458 3 Claims



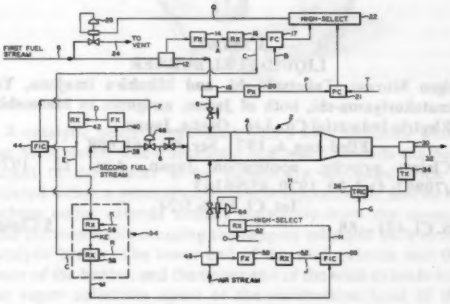
The disclosure is of a tamper implement, comprising a block contoured for use in moving and tamping cracker crumbs into position within a pie pan to form a cracker crumb pie crust.

3,734,675

BURNER CONTROLLING APPARATUS AND METHOD

Carl L. Osburn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 13, 1971, Ser. No. 162,057
Int. Cl. F23c *1/00*
U.S. Cl. 431—12 11 Claims



A method and apparatus for controlling the relative flow rates of first and second fuel streams and an air stream to a burner. The first fuel stream has a lower calorific value than the second fuel stream and the streams are controlled to maintain the burner combustion gas temperature above a preselected value, pass the first fuel into the burner at a maximum rate, pass the second fuel stream into the burner at a rate relative to the temperature of the combustion gas and provide a sufficient air stream flow rate for efficient combustion of the combined fuel streams.

3,734,676

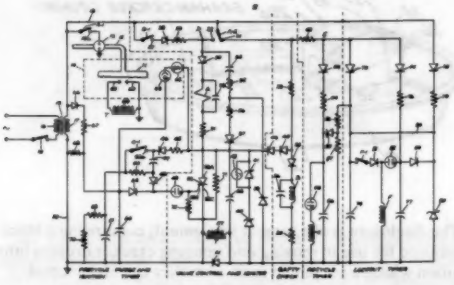
ELECTRICALLY ENERGIZABLE CONTROL SYSTEM FOR A FUEL BURNER

Alvin D. Wyland, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed June 18, 1971, Ser. No. 154,311
Int. Cl. F23n *5/08*
U.S. Cl. 431—79 18 Claims

An electrically energizable control system for a burner for a combustible fluid. The control system includes a valve control and igniter circuit for opening the control valve to allow fluid

to flow from the burner and generating an electric arc or spark for igniting the fluid. In the event ignition is not accomplished the valve control and igniter circuit automatically turns off after a predetermined period of time. A recycle timer circuit causes the valve control and igniter circuit to repeat the try for ignition a predetermined number of times after which a lockout timer circuit prevents further ignition trial, assuming



the fluid has not become ignited. A detection circuit maintains the valve control and igniter circuit in its valve open condition upon the fluid being ignited. The control system includes a safety check circuit which allows the initial valve opening and spark energization only if the control system is in proper condition at the beginning of its operation. Also there is a precycle purge timer for providing an initial period of the operation of the control system before ignition is attempted.

3,734,677

LIQUID FUEL BURNER

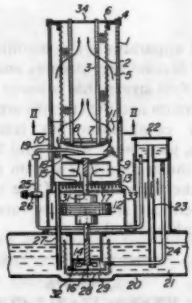
Shigeo Murase, Takatsuki-shi, and Mituhiro Imajima, Yamatokoriyama-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 6, 1971, Ser. No. 169,608

Claims priority, application Japan, Aug. 12, 1970, 45/70991; Oct. 29, 1970, 45/96163

Int. Cl. F23n *5/24*

U.S. Cl. 431—88 **5 Claims**



A liquid fuel burner in which a mixture of atomized liquid fuel and pre-heated air is burned on the surface of a heat-radiant cylinder and the resultant combustion gases are introduced into the interior of said radiant cylinder, whereby the unburned gas present in the combustion gases is completely burned by contact with heated rods arranged in said radiant cylinder.

3,734,678

PHOTOFLASH LAMP

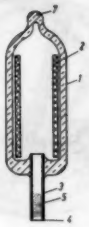
Reinhold Liepert, Wertingen, Germany, assignor to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed June 15, 1971, Ser. No. 153,212

Claims priority, application Germany, July 10, 1970, P 20 34 328.6

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **3 Claims**



A mechanically ignitable photoflash lamp in which an igniter tube containing a percussive type igniting material is sealed into the lamp bulb. The bulb has a filling of combustible material and a combustion supporting material. To prevent displacement of the combustible material due to the resulting pressure wave, when the igniting material is ignited, the combustible material is a physically stable web, mesh or network of foil or wire designed as a hollow body fitting the shape of the bulb and bearing against the bulb wall.

3,734,679

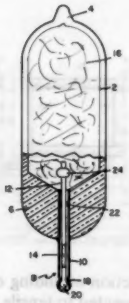
PHOTOFLASH LAMP

Thomas B. McDonough, c/o Sylvania Electric Products Inc., Montoursville, Pa.

Filed Nov. 20, 1970, Ser. No. 91,252

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **4 Claims**



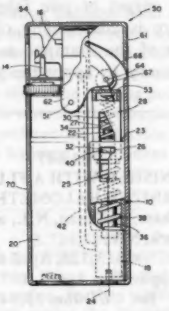
A percussive-type photoflash lamp having a primer of the type comprising a wire anvil partially coated with fulminating material and coaxially supported within a tube in a manner providing a clearance between the coating of fulminating material and the inner wall of the tube. The fulminating material contains sodium chlorate as the oxidizer and is prepared by mixing an aqueous slurry containing red phosphorus with an aqueous solution of dissolved sodium chlorate.

3,734,680

LIGHTER

Susumu Maruyama, Taito-ku, Tokyo, Japan, assignor to Auto-Time Distributors, Inc., Providence, R.I.

Filed Mar. 6, 1972, Ser. No. 232,003
Int. Cl. F23q 2/08
U.S. Cl. 431—132 8 Claims



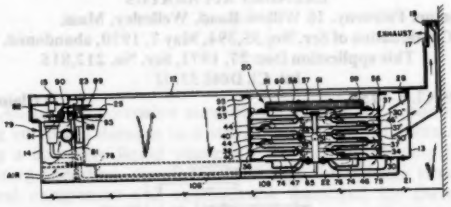
Cigarette lighter with an improved system for depressing a plunger to ignite a burner, comprising a thumb operated member carrying a bearing positioned adjacent a transverse surface of the plunger, the member having a path of movement carrying the bearing against and along the plunger surface while depressing the plunger.

3,734,681

GAS SMOOTH TOP RANGE

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Division of Ser. No. 45,991, June 15, 1970, Pat. No. 3,646,927.
This application Sept. 7, 1971, Ser. No. 178,408
Int. Cl. F23d 11/44
U.S. Cl. 431—242 3 Claims



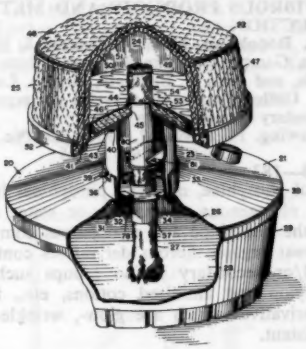
The range has plural radiant burners with individually associated heat exchangers and a common pressurized exhaust system. Each burner has a supply air tube the inlet end of which is obstructed by a coil spring which is variably expanded to act as an adjustable shutter regulating the amount of air that enters through its turns in response to actuation of the gas control valve for the burner. The burners have center simmer sections for low heat and single gas lines with port controlled terminals which variably direct the gas to the center simmer sections or to the main burner sections depending upon the rate of delivery of the same. A safety circuit prevents flow of gas to the range except when exhaust fans are properly operating, and a taut wire exposed to heating by all burners expands when any is above a selected temperature to signal such condition.

3,734,682

ADJUSTABLE CATALYTIC HEATER AND REPLACEABLE WICK ASSEMBLY THEREFOR

Randall L. May, Andover, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed July 9, 1971, Ser. No. 161,204
Int. Cl. F23d 3/18
U.S. Cl. 431—324 15 Claims



A catalytic heater is provided with a wick assembly which can be replaced when necessary and which permits the heat output of the heater to be varied. An elongated wick is secured within a generally cylindrical support tube, and an attaching collar extends radially outwardly from the support tube for removably securing the support tube and wick to the catalytic heater. The lower end of the wick extends into the fount of the heater, and the upper end of the wick extends into the vapor collection space of the combustion head of the heater for supplying fuel to the vapor collection space by capillary action. A tubular sleeve is slidably received by the upper portion of the wick, and the sleeve is movable by lever means between a raised position in which most of the wick within the vapor collection space is covered by the sleeve and a lowered position in which most of the wick within the vapor collection space is exposed. The combustion head is removably secured to the fount by a tubular connector to permit replacement of the wick and support tube when desired.

3,734,683

FLAMEPROOFING OF CELLULOSE

Virendra N. Gupta, and Renald L. Lafond, both of Hawkesbury, Ontario, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed Apr. 23, 1970, Ser. No. 31,374
Int. Cl. D06m *11/04, 11/12*; C09k *3/28*
U.S. Cl. 8—116 R 4 Claims

A process for flameproofing cellulosic materials, such as cotton and rayon. The cellulosic material is (a) oxidized to carboxycellulose, (b) the carboxycellulose is reacted with either a water-soluble alkali metal hydroxide, a buffer solution of water-soluble alkali metal salts or ammonia, and (c) the product of (b) is suspended in an aqueous solution of a water-soluble polyvalent cationic salt.

3,734,684

FLAME RETARDANT PHOSPHORUS CONTAINING FIBROUS PRODUCTS AND METHOD FOR PRODUCTION

Darrell J. Donaldson, Metairie, Donald J. Daigle, New Orleans, George L. Drake, Jr., and Wilson A. Reeves, Metairie, and John V. Beninate, Gretna, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 7, 1971, Ser. No. 141,446
Int. Cl. D06m *13/28*
U.S. Cl. 8—183 13 Claims

Methylol phosphine, methylol phosphines in combination with nitrogenous compounds or water soluble adducts of the phosphine and nitrogenous compounds are used to treat organic fibrous derivatives containing primary and/or secondary amino groups such as wool, leather, nylon and aminized cottons, etc., to produce fibrous derivatives which are glow-, wrinkle-, rot- and shrink-resistant.

3,734,685

CATALYSIS OF THE CELLULOSE-CYCLIC UREA REACTIONS BY BUILT-IN ACID GROUPS

Dorothy M. Perrier, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 15, 1972, Ser. No. 234,960
Int. Cl. D06m *13/20, 15/58, 15/72*
U.S. Cl. 8—129 5 Claims

Sulfonic acid groups in sulfonoethylated cotton act as built-in catalysts for the reaction of cotton with substituted cyclic ureas. The cotton in the acid form did not require an additional catalyst for its reaction in aqueous media with dimethylolethylene urea, dimethylolpropylene urea, dihydroxyethylene urea, and dimethyloldihydroxyethylene urea. The strong acid groups of SE-cotton were more effective than carboxylic or phosphonic acid groups of carboxymethylated and phosphonomethylated cottons of like degree of substitution with each urea.

3,734,686

COMPOSITION AND METHOD FOR TREATING CARPETS AND PILE FABRICS

George W. Douglas, Homewood, Ill., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,391
Int. Cl. B08b *3/00*
U.S. Cl. 8—137 2 Claims

A composition and method for treating carpets and pile fabrics to enhance the abrasion resistance and antistatic properties of such articles are disclosed. The compositions are formulated by adding an aqueous emulsion of oxygen-free polyethylene to a conventional detergent composition adapted for the cleaning of carpets and pile fabrics, advantageously a carpet or upholstery shampoo. In shampooing a carpet or pile fabric with the subject compositions, there is additionally obtained an increase in foaming action of the shampoo as well as a decrease in the force necessary to apply the shampoo.

3,734,687

FABRIC FINISHED WITH A FLUORINATED QUARTERNIZED HALOMETHYL ETHER

John Thomas Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.

Division of Ser. No. 813,725, April 4, 1969, Pat. No. 3,622,590. This application Apr. 5, 1971, Ser. No. 131,451
Int. Cl. D06m *13/34*
U.S. Cl. 8—188 1 Claim

Fluorinated halomethyl ethers and the quaternary salts thereof, which are useful as stain repellents, have the formulas:

$$R_f(CH_2)_n(OR)_mOCH_2X \text{ and } [R_f(CH_2)_n(OR)_mOCH_2A]^+X^-$$

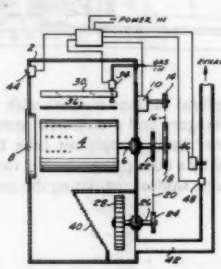
wherein R_f is perfluoroalkyl of four to 16 carbon atoms, R is alkylene of two to three carbon atoms, X is halogen of the group chlorine or bromine, A is the residue of a tertiary nitrogenous base, n is an integer of 1–12 and m is an integer of 1–4. The quarternized compounds are employed for treating textile material such as cotton fabric.

3,734,688

LAUNDRY APPARATUS

Samuel Fairneny, 16 Willow Road, Wellesley, Mass.

Continuation of Ser. No. 35,394, May 7, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,815
Int. Cl. D06f *33/02*
U.S. Cl. 8—159 4 Claims



Laundry washer and drier equipment is adapted for washing sorted classes of fabrics, such as towelling, bed linens, and "no-iron" fabrics. Wash cycle lengths for the various classes of fabric are determined and the washer timer dial is marked for the start and finish time of each fabric. The dial on a drier having dry cycle times equal in length to the wash cycle times has its timer dial marked in the same manner.

3,734,689

PROCESS FOR SEPARATION OF HAFNIUM FROM ZIRCONIUM

Edwin M. Larsen, Madison, Wis., and Francisco C. Gil-Arnao, San Bernardino, Caracas, Venezuela, assignors to Wisconsic Alumni Research Foundation, Madison, Wis.

Filed Feb. 7, 1969, Ser. No. 797,683
Int. Cl. C22b 59/00
U.S. Cl. 423—71 13 Claims

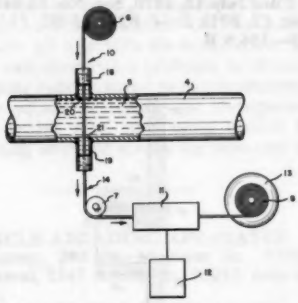
A process for separating hafnium from zirconium wherein the tetrahalides of the metals are reacted with a metal selected from the group consisting of aluminum and zirconium in finely divided form in the presence of an aluminum trihalide at a reaction temperature above the melting point temperature for the aluminum trihalide whereby the reaction is carried out in a liquid system with preferential reduction of the zirconium component over the hafnium component to enable separations therebetween.

3,734,690

CORROSION SURVEILLANCE SYSTEM

Morris Kolodney, River Edge, N.J., and William Arbiter, Yonkers, N.Y., granted to the United States Atomic Energy Commission under the provisions of 42 U.S.C. 2182

Filed Apr. 28, 1970, Ser. No. 32,542
Int. Cl. G01n 17/00
U.S. Cl. 23—230 C 21 Claims



An on-line corrosion surveillance system for monitoring corrosion damage to a structural component containing a corrosive liquid wherein a fine control element is, during operation, drawn longitudinally through the structural component and subsequently measured for corrosion damage due to its exposure to the corrosive liquid within the component. The control element is made of the same material as the structural component and specially constructed sealing means is provided for preventing escape of the corrosive liquid from the component as the control element is moved therethrough.

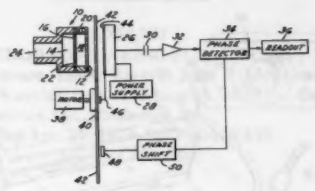
3,734,691

SENSING SYSTEM FOR A CHEMILUMINESCENT INSTRUMENT

Cassimer M. Kukla, Taylor, and Alan Warnick, Oak Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 15, 1971, Ser. No. 180,599
Int. Cl. G01n 21/52; G01j 1/54, 1/34
U.S. Cl. 23—253 R 7 Claims

An opaque blade is rotated between the light transmitting element of a chemiluminescent reaction chamber and a light sensing device. The blade is sufficiently wide to block momentarily all light transmission from the reaction chamber to the light sensing device. An alternating electrical signal thus is obtained directly from the light sensing device. A transparent electrically conductive coating applied to the face of the light sensing device is



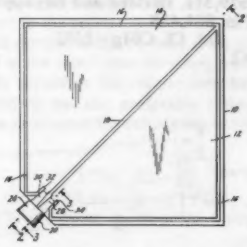
grounded electrically to the blade to prevent spurious electrical signals.

3,734,692

ALVEOLAR AIR BREATH SAMPLING AND ANALYZING APPARATUS

Jerome R. Lucker, Tenafly, and Andrew A. Oakes and Thomas H. Foster, Jr., Harrington Park, N.J., assignors to Becton Dickinson and Company, East Rutherford, N.J.

Filed Feb. 4, 1972, Ser. No. 223,670
Int. Cl. G01n 1/22, 33/16
U.S. Cl. 23—254 R 4 Claims



An apparatus for sampling alveolar breath by the sequential collection of a single exhalation includes an inelastic bag having first and second inflatable compartments therein. A mouthpiece is connected to the bag. The mouthpiece has an entrance conduit and a first outlet in communication with the first compartment and a second outlet in communication with the second compartment. The second outlet is adapted to retard the passage of air therethrough until a subject fills the first compartment. The sample of air collected in the second compartment is analyzed by forcing it through an ampoule filled with an alcohol colorimetric reagent.

3,734,693

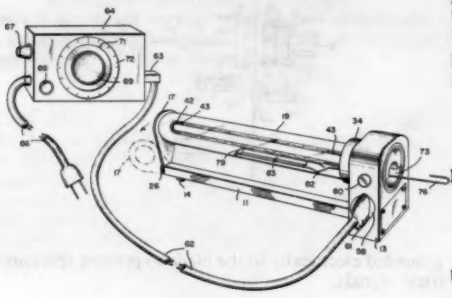
APPARATUS FOR DRYING AND DEVELOPING CHROMATOGRAMS

Darrell G. Petcoff, Hamilton, Mont., assignor to Ivan Sorvall, Inc., Newton, Conn.

Filed Aug. 9, 1971, Ser. No. 170,022
Int. Cl. F27b 5/14; F27d 11/00; G01n 31/08
U.S. Cl. 23—253 PC 5 Claims

Apparatus and method for both drying and developing chromatograms safely in a single equipment into which they are removably inserted and processed within a confined heat controlled enclosure. A feature of the invention is the provision of an elongated heating element supported at one end by a block and a removable tubular enclosure

also supported by said block and forming a heating chamber around said heating element. Spring means are provided for releaseably securing said tubular element around



said heating element. The apparatus comprises readily assembled and disassembled components which are corrosion-resistant and are easily cleaned.

3,734,694

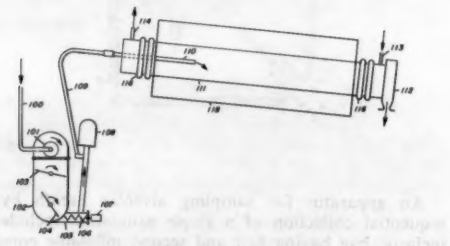
APPARATUS FOR PRODUCING UO_2 POWDER

John J. McCoy, San Jose, Calif., assignor to General Electric Company

Original application Apr. 25, 1968, Ser. No. 724,119, now Patent No. 3,579,311. Divided and this application Dec. 2, 1969, Ser. No. 881,438

Int. Cl. C01g *43/02*

U.S. Cl. 23—262 **3 Claims**



An improved apparatus for preparing uranium dioxide powder suitable for use in the fabrication of fuel for nuclear reactors. The apparatus has a hopper for receiving dewatered sludge, mixing means within the hopper to maintain a uniform slurry in the hopper, means for receiving the slurry from the hopper and feeding the slurry through at least one outlet, and a rotating tube calciner adapted to be maintained at a temperature in excess of 1000° F. with the outlet positioned at about the center of the calciner circumference adjacent one end thereof.

3,734,695

PROCESS FOR MAKING MONOCRYSTALLINE SILICON

Willis H. Campbell, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 13, 1970, Ser. No. 63,381

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **10 Claims**

Disclosed is a process for making monocrystalline silicon in a zone refining operation. In this process, a gaseous mixture comprising predetermined volume percentages of hydrogen gas and a selected inert gas, such as argon, is introduced or "purged" into a chamber of a zone refiner both prior to and during a silicon zone refining operation. The presence of a selected volume percentage of no more than 5% hydrogen gas in this gaseous mixture which is purged into the zone refining chamber has been found to eliminate swirls in the silicon which had previously been discovered after etching zone refined silicon wafers processed in a zone refining operation using no hydrogen gas.

3,734,696

VANADIUM RECOVERY FROM ACIDIC SOLUTIONS

Michael F. Lucid, and William M. Leaders, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Sept. 4, 1970, Ser. No. 69,938

Int. Cl. B01d *11/04*; C01g *31/00*

U.S. Cl. 23—312 ME **4 Claims**

A method for the extraction of vanadium (V) from acidic mixtures containing fluoride comprising effecting the extraction with amines in a water-immiscible organic solvent, the vanadium being complexed with the extractant and being extracted into the organic phase.

3,734,697

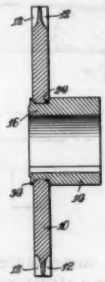
PUMP IMPELLER MAKING

Leonard J. Sieghartner, Coal Valley, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.

Filed July 13, 1970, Ser. No. 54,441

Int. Cl. B21k *3/04*; B23p *15/02, 15/04*

U.S. Cl. 29—156.8 R **3 Claims**



The process of making an impeller for use in a pump by affixing a disc having blades formed about its outer periphery onto the reduced diameter portion of a hub. A plurality of longitudinal grooves is formed lengthwise into the reduced diameter hub portion and then pressed into a circular bore formed in the center of the impeller disc. The assembly is then placed in a press to swage the outer annular edge of the reduced diameter hub portion into a chamfer provided around the circular bore of the disc to thereby solidly hold the disc against the shoulder on the hub.

3,734,698

TRANSPARENT ELECTROCONDUCTIVE WINDOW AND ELECTROCONDUCTIVE SOLDER THEREFOR

Dennis S. Postupack, Lower Burell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,619

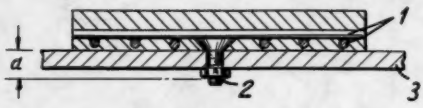
Int. Cl. B21d *39/00*

U.S. Cl. 29—191 **7 Claims**

A tin-free alloy for use in making an electrical solder connection between a tinned copper wire and a ceramic silver conductive stripe on a glass substrate. The solder

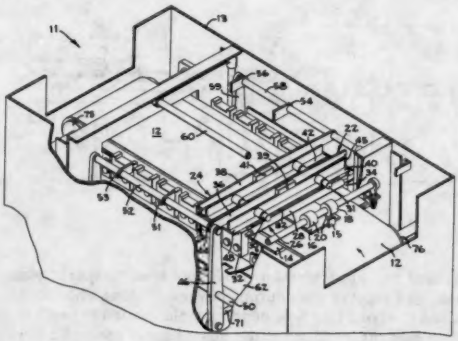
connection is useful in electroconductive windows, particularly laminated windows fabricated at a temperature range up to about 300° F.

3,734,699
REINFORCED PIG IRON WEAR PLATE
Herbert Austermann, Dortmund-Solde, Germany, assignor to Hermann Rappold & Co., GmbH, Duren-Birkesdorf, Germany
Continuation of application Ser. No. 691,793, Dec. 19, 1967. This application Aug. 28, 1970, Ser. No. 68,003
Claims priority, application Germany, Dec. 19, 1966, H 61,335
Int. Cl. B23p *3/20*
U.S. Cl. 29—191.4 7 Claims



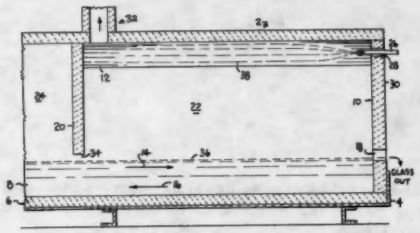
A cast iron wear plate, particularly resistant to stresses due to grinding action and due to impacts, such as are characteristic of mining operations, has the following composition in percentages by weight: carbon 3.4 to 4.1%, silicon 0.15 to 0.6%, manganese 0.5 to 0.9%, phosphor 1.6 to 2.0% and sulphur 0.025 to 0.15%, balance substantially all iron with the usual impurities. The wear plate has cast therewith a gridwork of circular cross section reinforcing rods arranged in two superposed layers so as to form square or rectangular interspaces, these circular cross section steel rods being welded to each other. A fastening screw or screws are also cast with the wear plate.

3,734,700
ARTICLE ABRADING APPARATUS
Thomas Gutierrez, 395 N. Madison St. 95050, and Wallace Amaral, 2547 Amethyst 95051, both of Santa Clara, Calif.
Filed May 10, 1971, Ser. No. 141,761
Int. Cl. B24b *7/12*
U.S. Cl. 51—61 10 Claims



The disclosure is an article abrading apparatus having an article carrier belt and arms including abrading members moving across the belt with abrasive reciprocating motion. Abrasive contact with articles of flat and triangular cross sectional shapes is provided by a pivotally hinged arrangement of abrading members which are positioned by movable roller bars sensing the surface tilt or contour of an article passing beneath.

3,734,701
METHOD FOR MAKING FLOAT GLASS
George A. Pecoraro, Lower Burrell; John F. McConnell, and Leonard A. Knavish, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 29, 1971, Ser. No. 138,699
Int. Cl. C03b *5/22*
U.S. Cl. 65—27 5 Claims



In the production of high-quality flat glass by the float process, tridymite-frost stone defects are safely avoided by providing burners in the refiner zone of the furnace to shield the crown of that portion of the furnace from contact with alkali vapors, and at the same time providing not only a barrier that substantially separates the refiner-zone headspace from the melter headspace but also preferably a means associated with refiner-zone headspace for exhausting or venting it.

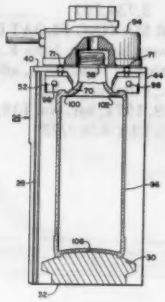
3,734,702
GLASS SEALING METHOD
Frank Veres, Toledo, Ohio, assignor to Owen-Illinois Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 860,433, Sept. 23, 1969, Pat. No. 3,645,839, which is a continuation-in-part of Ser. No. 790,465, Jan. 10, 1969, abandoned. This application May 3, 1971, Ser. No. 139,900
Int. Cl. C03c *27/00, 29/00*
U.S. Cl. 65—43 9 Claims

A crystallizable fusion-type glass sealing composition, such as lead borosilicate or lead-zinc-borate solder glass, having incorporated therein from about 1 to about 18 percent by weight of aluminum titanate; which composition is used as a sealing glass. The aluminum titanate inhibits crystallization, thus allowing for more time for sealing parts without developing a seal with uneven stress concentration due to crystallization.

3,734,703
METHOD FOR FORMING A BLOWN BOTTLE HAVING A CHIME IN THE SHOULDER PORTION THEREOF
Elvin R. Hollingsworth, Winchester, Ind., assignor to Owens-Illinois Inc., Winchester, Ind.
Filed Jan. 12, 1971, Ser. No. 105,872
Int. Cl. C03f *9/14*
U.S. Cl. 65—68 4 Claims

Method for forming a bottle having a chime or groove in its shoulder portion. This is achieved by providing at the tops of two mold halves movable mold parts forming an annular flange. The movable parts and the flange carried thereby are normally urged upwardly by coil springs but are forced downwardly against the force of the springs by a blowhead positioned over the mold halves when closed around a par-

tially formed glob of glass (i.e., a parison). After the bottle is blown, the blowhead is removed, permitting the aforesaid



movable mold halves to move upwardly under the force of the springs to permit the mold halves to open and release the blown bottle having a chime in its shoulder portion.

3,734,704

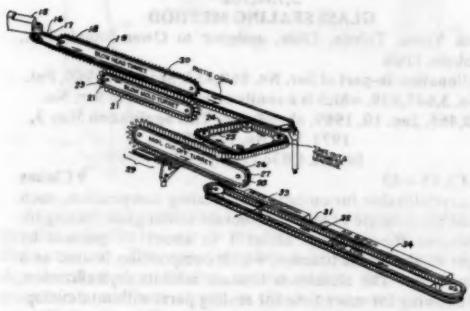
METHOD OF MAKING GLASS ARTICLES

Roy Albert Fike, Waco, Tex., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 15,523, March 2, 1970, abandoned. This application Oct. 15, 1971, Ser. No. 189,755

Int. Cl. C03b 9/14, 2/100, 25/00

U.S. Cl. 65—69 **10 Claims**



A method of forming a hollow glass article including a bulbous base portion and an open neck portion wherein the glass article initially formed is inclusive of an integral moile, with a compressive stress on the outer surface by first forming the glass article from a ribbon of glass by blowing the glass outwardly against the sides of the rotating mold, severing the article from the ribbon of glass, and allowing the blown article to cool which provides substantially uniform compressive stresses throughout the outer surface thereof; shaping the neck portion of the article by burning off the moile and forming a finish rim in bead form which disturbs the compressive stresses in an area of the neck portion; whereupon the area of the neck is heated and quenched to re-establish the compressive stresses in the outer surface of the neck portion as well as the balance of the outer surface of the article.

3,734,705

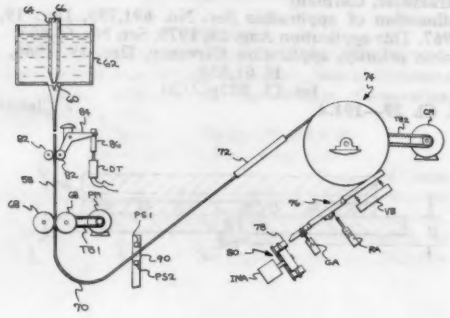
METHOD AND APPARATUS FOR PRODUCING AND PACKAGING SEALED TUBULAR GLASS BODIES

Frederick D. Fincham, Monclova, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 9, 1971, Ser. No. 132,720

Int. Cl. C03b 15/18

U.S. Cl. 65—87 **30 Claims**



Method and apparatus for automatically producing and packaging sealed sections of thermoplastic tubing, such as glass tubing. Spaced localized zones, of a length of tubing held in an arcuate path to exert a bending moment on the tubing, are heated to melt the tubing at each zone to enable the tubing to separate at the zones into individual sections as the bending moment on the tubing pulls the tubing apart. The tubing is clamped in the arcuate path intermediate the localized zones to enable each tubing portion end to exert a bending moment independent from the bending moment exerted by the other end of the tubing portion. The clamped individual tubing sections are then released and directed to a packaging area.

3,734,706

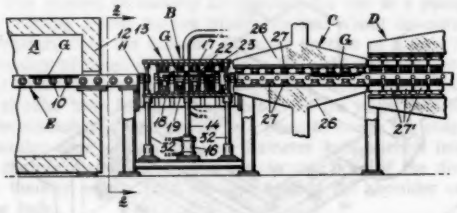
PRODUCING BENT TEMPERED GLASS SHEETS

George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 16, 1971, Ser. No. 134,672

Int. Cl. C03b 27/00, 23/02

U.S. Cl. 65—104 **10 Claims**



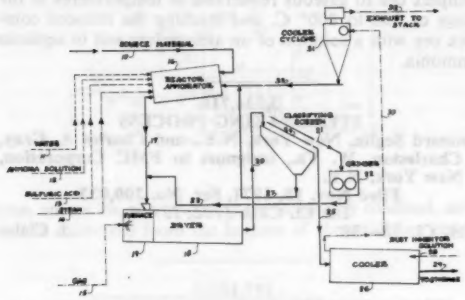
Method and apparatus for producing bent tempered glass by heating a sheet of glass during movement along a horizontal path and toward a ring type bending mold located beneath the path, raising the mold when the heated sheet reaches a position directly over it to lift the sheet bodily from the path and rapidly enough to cause it to sag into conformity with the shaping surface of the mold, rapidly chilling the bent sheet on the raised mold to initiate the tempering thereof, and continuing the chilling without cessation during lowering of the mold to return the sheet to the path and until the tempering is complete.

3,734,707

PROCESS FOR REDUCING EMISSION OF DUST BY GRANULAR FERTILIZER COMPOSITIONS

James E. Seymour, Virgina Beach, Va., assignor to Royster Company, Norfolk, Va.

Filed Oct. 22, 1970, Ser. No. 82,950
Int. Cl. C05c 7/00
U.S. Cl. 71—30 22 Claims



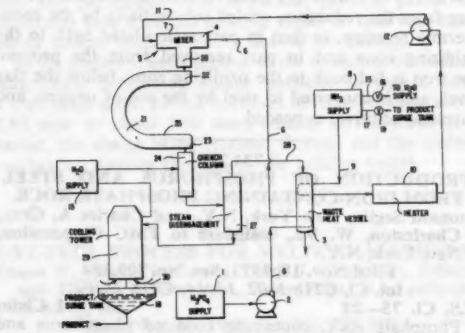
Emission of air-borne particulates by granular fertilizer compositions upon being moved or handled is substantially reduced by spraying the granules with aqueous solutions of nitrogen-containing salts at the end of the cooling phase of the manufacturing procedure.

3,734,708

METHOD FOR MAKING AMMONIUM PHOSPHATE FERTILIZER

Tom V. Burns, St. Rose, La., assignor to Amex Phosphates, Inc., Houston, Tex.

Filed Feb. 24, 1971, Ser. No. 118,299
Int. Cl. G05b 7/00
U.S. Cl. 71—34 8 Claims



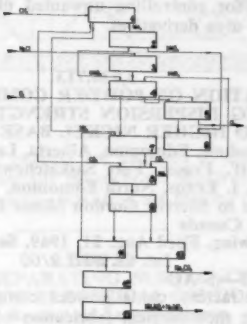
Methods and apparatus for reacting ammonia and phosphoric acid in a high temperature vaporous reaction. The apparatus includes a tee mixer wherein hot ammonia is used to heat and atomize phosphoric acid, and a loop reactor wherein the mixed reactants are retained for from 0.10 to 0.18 seconds after which the reaction product is immediately quenched. The apparatus also includes materials handling devices for controlling reactant flows and reaction conditions whereby high analysis polyphosphate fertilizers are produced in dry or liquid form.

3,734,709

PROCESS FOR THE PRODUCTION OF CHLORINE, SODIUM BICARBONATE AND AMMONIUM-SODIUM NITRATE

Ernest Pischinger, Konopnickiej 21a, Torun; Stanislaw Bursa, Malczwskiego 19/5, Szczecin; Henryk Koneczny, Krasinskiego 57/9, Torun, and Jerzy Straszko, Ksieciz, Witolda 1a/10, Szczecin, all of Poland

Continuation-in-part of Ser. No. 808,062, March 18, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,822
Int. Cl. C05c 13/00
U.S. Cl. 71—59 5 Claims



A combined process for producing chlorine, sodium bicarbonate and ammonium-sodium nitrate comprising oxidizing sodium chloride with nitric acid solution to form with unreacted nitric acid, sodium nitrate solution and gaseous reaction products including chloride, nitrogen oxide and nitrosyl chloride; oxidizing chlorine compound in said gaseous mixture to chlorine and removing chlorine by liquefaction and distillation or by absorption with solvent; absorbing nitrogen oxides in said gaseous reaction products into nitric acid, neutralizing the solution mixture of sodium nitrate and nitric acid by ammoniation and carbonizing the neutralized product to precipitate sodium carbonate and leave a solution of ammonium-sodium nitrate.

3,734,710

HERBICIDAL METHOD EMPLOYING CHLOROMETHANE SULFONANILIDES

Alfons Lukaszczyk, Basel, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba Limited, Basel, Switzerland

Filed Apr. 22, 1970, Ser. No. 30,982
Claims priority, application Switzerland, Apr. 30, 1969, 6617/69
Int. Cl. A01n 9/16
U.S. Cl. 71—103 1 Claim

Halogenmethylsulfonamides, preferably halogenmethylsulfonanilides which are substituted or unsubstituted in the phenyl nucleus may be used as plant influencing agents, for example as selective herbicides.

3,734,711

HERBICIDAL COMPOSITION AND METHOD

John Yates, Whitstable, and Barry R. J. Devlin, Sittingbourne, England, assignors to Shell Oil Company, New York, N.Y.

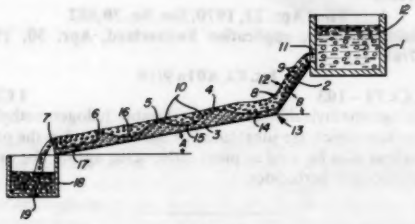
No Drawing. Original application Sept. 3, 1969, Ser. No. 855,014, now Patent No. 3,634,509. Divided and this application Mar. 15, 1971, Ser. No. 124,467
Int. Cl. A01n 9/20
U.S. Cl. 71—118 6 Claims

Novel herbicidal ortho-nitroanilinoacetamides such as 2-(2,6-dinitroanilino)-N-methyl-propionamide.

3,734,712
METHOD FOR CONTROLLING UNWANTED PLANT GROWTH
Adolf Fischer, Mutterstadt, Karl-Heinz Koenig, Ludwigshafen, Gustav Steinbrunn, Schwegenheim, and Albrecht Zschocke, Bad Durkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Continuation-in-part of application Ser. No. 652,034, July 10, 1967, now Patent No. 3,621.055. This application Sept. 11, 1970, Ser. No. 71,356
Claims priority, application Germany, July 19, 1966, P 15 42 834.9; Jan. 17, 1967, P 16 42 217.6
Int. Cl. A01n 9/20
U.S. Cl. 71—120 2 Claims
Method for controlling unwanted plant growth with substituted urea derivatives.

3,734,713
PREPARATION OF POWDER COMPOSITION FOR MAKING DISPERSION STRENGTHENED BINARY AND HIGHER NICKEL BASE ALLOYS
Bud W. Kushnir, Edmonton, Alberta, Leon F. Norris and Robert W. Fraser, Fort Saskatchewan, Alberta, and David J. I. Evans, North Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada
No Drawing. Filed Aug. 21, 1969, Ser. No. 852,110
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 AC 5 Claims
Metal-refractory oxide powder compositions adapted for powder metallurgical fabrication of wrought dispersion strengthened nickel base binary and higher alloys are prepared by wet attritor grinding blends of very finely divided metal powders. The blends are formed of composite nickel-refractory oxide powder and chromium, tungsten, molybdenum and/or cobalt powder having a particle size below 1 micron. The wet attritor grinding is conducted for a time sufficient to produce a homogeneous powder mixture and to effect uniform spatial distribution of the refractory oxide particles in the powder mixture.

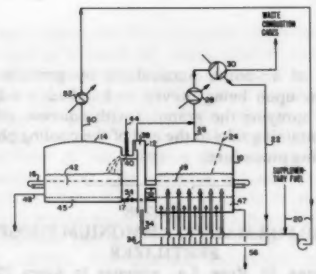
3,734,714
PROCESS FOR PRODUCING A Ca-Ba-Al-Si-CONTAINING ALLOY
Donald S. Kozak, North Tonawanda, N.Y., and David P. Miller, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,466
Int. Cl. C22d 7/06
U.S. Cl. 75—10 R 9 Claims



This invention relates to a continuous process and apparatus for producing a steel treating agent of a Ca-Ba-Al-Si-containing alloy and particularly to an intermediate prechilling step whereby the slag from a molten Ca-Ba-Si-containing alloy is effectively removed prior to introducing the additives of aluminum and a metal selected from the group consisting of iron, nickel, chromium, cobalt and manganese, to form the Ca-Ba-Al-Si-containing alloy.

3,734,715
EXTRACTION OF METAL VALUES FROM COMPLEX ORES
Michael J. Redman, Belmont, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.
Filed July 16, 1970, Ser. No. 55,304
Int. Cl. C22b 3/00; C21b 1/02
U.S. Cl. 75—21 9 Claims
Copper, nickel, cobalt and molybdenum may be extracted from complex ores containing manganese, iron, copper, nickel, cobalt and molybdenum by subjecting the complex ore to gaseous reductants at temperatures in the range of 300 to 800° C. and leaching the reduced complex ore with a solution of an ammonium salt in aqueous ammonia.

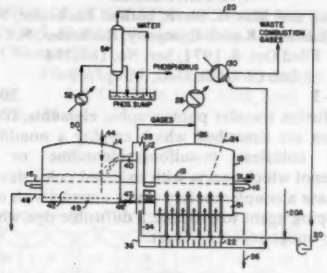
3,734,716
STEELMAKING PROCESS
Leonard Seglin, New York, N.Y., and Charles A. Gray, Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,033
Int. Cl. C21b 1/02, 13/14
U.S. Cl. 75—28 1 Claim



Iron ore is melted, together with recycle slag and a flux if necessary, in an oxidizing zone to a temperature substantially higher than that necessary for carbon to reduce the ore to the metal; the hot molten material is pumped into a separate reduction zone into which carbon is fed to reduce the oxidized iron to iron; the molten slag from the reduction, cooled substantially by the endothermic reaction, is then in part recirculated back to the oxidizing zone and in part removed from the process; the iron is fed back to the oxidizing zone, below the slag level, and is converted to steel by the use of oxygen, and chemical additives as needed.

3,734,717
PRODUCTION OF PHOSPHORUS AND STEEL FROM IRON-CONTAINING PHOSPHATE ROCK
Leonard Seglin, New York, N.Y., and Charles A. Gray, Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,154
Int. Cl. C21b 1/02, 13/14; C01b 25/02
U.S. Cl. 75—28 1 Claim
Phosphate rock, containing oxidized phosphorus and iron, is melted, together with recycle slag and a flux if necessary, in an oxidizing zone to a temperature substantially higher than that necessary for carbon to reduce the iron and phosphorus; compounds in the ore to their elements; the molten material is pumped into a separate reduction zone into which carbon is fed to reduce the iron and phosphorus compounds to their elements; the molten slag from the reduction, cooled substantially by the endothermic reaction, is then in part recirculated back to the oxidizing zone and in part removed from the process. The phosphorus produced is collected overhead from

the reducing zone; the alloy of iron and phosphorus produced in the reduction is transferred to the oxidizing zone, where the phosphorus is preferentially oxidized, and steel is recovered from the bottom of the oxidizing zone.



3,734,718

MAGNESIUM-MAGNESIUM CHLORIDE BATH SEPARATION

William L. Bradshaw, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1971, Ser. No. 208,263
Int. Cl. C22b *7/00, 45/00;* **B07b** *1/00*
U.S. Cl. 75—63 **13 Claims**

Magnesium metal, when removed from the electrolytic cells from which it is produced, unavoidably has an appreciable amount of electrolytic bath, also usually a small amount of particulate solid impurities (commonly called sludge) adhering to the metal. The separation of the electrolytic bath therefrom and the disposal thereof is attained by the practice of the invention which comprises, broadly, passing the mixture of molten metal and bath, together with the solid particulate sludge therein, onto a wire mesh metal screen, having openings in the range of about 2.46 mm. to about 0.84 mm., whereby the bath falls through the screen and is optionally transferred onto a cooler collecting surface, preferably a portable surface where it solidifies, and the molten metal, and any particulate solid impurities present, passes on preferably into a heated holding vessel or reservoir from which molten metal is being drawn for casting.

In the preferred embodiment of the invention the molten magnesium containing sludge particles is passed onto a wire mesh sieve, having openings of from between about 2.60 mm. to about 5.60 mm., usually in the form of a basket, the sludge being retained thereon and the molten magnesium passing through to the holding vessel.

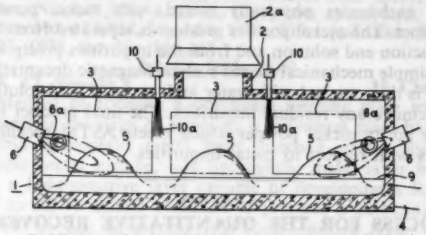
3,734,719

OXY-FUEL PROCESS FOR MELTING ALUMINUM

James W. Estes, Piscataway, Lewis J. Geiger, Jr., Edison, and Thomas L. Shepherd, Essex Fells, N.J., assignors to Airco, Inc.

Filed Nov. 13, 1968, Ser. No. 775,367
Int. Cl. C22b *7/00, 21/06, 21/00*
U.S. Cl. 75—65 **14 Claims**

Process for melting metals in a fuel-fired furnace, more specifically, for the remelting of secondary aluminum. The process, which may be applied in a furnace of the reverberatory type, employs one or more oxy-fuel burners to supplement the heating operation of conventional air-fuel burners. The oxy-fuel burner flame is carefully controlled as to length, direction, velocity, temperature, and flame chemistry so that at least 90 percent of the combustion is completed before the combustion products come in contact with the charge or the bath. Several alternative furnace burner arrangements are disclosed which respectively employ oxy-oil burners of the self-atomizing tip-mix type, and oxy-gas burners of the rocket type. In each case, the oxy-fuel burners are disposed to create turbulence which substantially enhances the heat transfer in the furnace, thereby vastly increasing the melting rate.

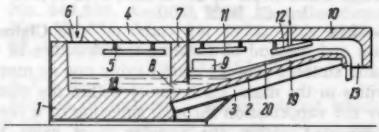


3,734,720

METHOD OF SEPARATING SUBSTANCES FROM A MELT OF GOOD ELECTRICAL CONDUCTIVITY

Axel von Starck, Remscheid-Luttringhausen, and Franz Pawlek, Berlin, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed June 1, 1971, Ser. No. 148,347
Int. Cl. C22b *9/12, 7/00, 21/06*
U.S. Cl. 75—93 **6 Claims**



A method of separating from a melt substances having solubilities which decrease with decreasing temperature whereby the melt is conveyed by an electro-magnetic field up an ascending conveyor trough from a holding vessel and a temperature gradient generated along the trough to cause the substances to precipitate.

3,734,721

PRODUCTION OF NICKEL POWDER FROM BASIC NICKEL CARBONATE

Willie Seibt, Edmonton, and Donald Robert Weir, Fort Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

No Drawing. Filed June 21, 1971, Ser. No. 155,328
Int. Cl. C22b *23/04*
U.S. Cl. 75—108 **15 Claims**

Basic nickel carbonate which contains sulphur and undesirable impurities such as magnesium, aluminum, manganese, iron, zinc and silica is slurried in aqueous media and is reacted with hydrogen under conditions which are controlled such that the nickel content of the slurry is reduced to elemental powder form while the impurities are converted to insoluble compounds which are only physically associated with the nickel powder and, therefore, readily separable therefrom. Specifically, any sulphur in the reduction slurry that is not in sulphate form is

first oxidized to sulphate form and then sufficient compatible acid neutralizing reagent, such as ammonia, is provided in the slurry to produce a pH in the reduction end solution above about 3.5 and preferably between about 5 and about 7. With such pH control in the reduction operation the impurities in the basic nickel carbonate feed material are precipitated as a mixture of hydroxides and carbonates physically mixed with nickel powder product. The nickel powder product is separated from the reduction end solution and from the impurities precipitate by simple mechanical means such as magnetic decantation and is then washed with water and/or weak acid solution to remove any residual impurities. The final product is a high purity nickel powder which meets ASTM specifications with respect to metal impurities.

3,734,722

PROCESS FOR THE QUANTITATIVE RECOVERY OF GOLD FROM AQUEOUS SOLUTIONS

Max Ziegler, Gottingen-Herberhausen, Germany, assignor to W. C. Heraeus GmbH, Hanau, Germany

No Drawing. Filed June 14, 1971, Ser. No. 153,114
Claims priority, application Germany, June 25, 1970, P 20 31 432.3
Int. Cl. C01g 7/00; C22b 11/00
U.S. Cl. 75—118 **3 Claims**

Gold is recovered from mineral acid solution by forming a complex with tetrahydrofuran, dissolving the complex in an organic solvent and recovering the gold.

3,734,723

COMPACTED AND SINTERED POWDER MASS HAVING A DISCRETE CAVITY IN THE MASS AND METHOD OF FORMING

Earl B. Blasch, Colonie, Richard M. Klingaman, Tonawanda, and Daniel M. Page, Cohoes, N.Y., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,977
Int. Cl. B22f 1/00
U.S. Cl. 75—214 **10 Claims**

A structure and method of forming the structure of a compacted and sintered powder mass having one or more discrete cavities in the mass. Each cavity within the mass is formed by the vaporization through sintering of a core material compacted within the powder mass prior to sintering.

3,734,724

DEVELOPED IMAGE TRANSFER

William C. York, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,996
Int. Cl. B41n 3/00; G03g 13/14
U.S. Cl. 96—1.4 **13 Claims**

Developed images carried on a photoconductive element are transferred by first applying a repelling potential to a conductive receiving member, contacting the member with the developed image, and uniformly exposing the element to actinic radiation while applying an external bias potential.

3,734,725

SILVERLESS PHOTOGRAPHIC PRINTING PAPER

Robert J. Bailey, College Park, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed May 28, 1969, Ser. No. 828,724
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 **18 Claims**

This invention relates to a novel polyethylene glycol-containing polyene which in combination with a polythiol, photosensitizer and pigment adhered to at least one UV transparent film by an adhesive layer can be used as a silverless photographic printing paper which can be developed by washing in warm water.

3,734,726

DIFFUSIBLE COLOR COUPLER MOIETIES ARE RELEASED FROM NONDIFFUSIBLE M-SULFOAMIDOANILINES OR M-SULFOAMIDOPHENOLS IN DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS AND PROCESSES

John Figueras, and Max H. Stern, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,394
Int. Cl. G03c 1/40, 5/54, 7/00
U.S. Cl. 96—3 **20 Claims**

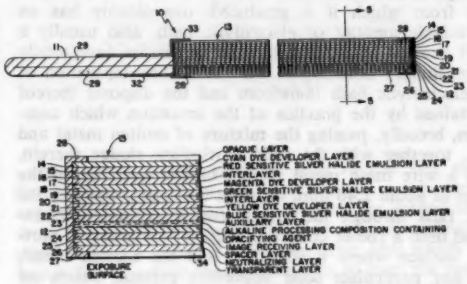
Color, diffusion transfer photographic elements, film units and processes are described which employ a nondiffusible, substantially colorless m-sulfonamidoaniline or m-sulfonamidophenol which reacts with oxidized color developing agent to release a coupler moiety which couples with oxidized color developing agent to produce a diffusible dye which diffuses to a dye image-receiving layer.

3,734,727

PHOTOGRAPHIC PRODUCTS AND PROCESSES

Terry W. Milligan, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of abandoned applications Ser. No. 83,479 and Ser. No. 83,480, both Oct. 23, 1970. This application Oct. 28, 1971, Ser. No. 193,480
Int. Cl. G03c 1/48, 5/54, 17/00
U.S. Cl. 96—29 D **41 Claims**



The present invention relates to photography and, more particularly, to reflection type diffusion transfer process photographic film units which comprise a composite photosensitive element adapted to provide, by diffusion transfer photographic processing, selective integral negative and positive image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which includes a plurality of sequential layers including a photosensitive silver halide layer having associated therewith image-forming material which is processing composition diffusible at a first pH as a function of the point-to-point degree of silver halide layer exposure to incident actinic radiation; a layer adapted to receive image-forming material diffusing thereto; and which additionally includes means for providing at least one optical filter agent at a pH above the pK_a of the optical filter agent whose pK_a is below said first pH in a concentration effective to provide, in situ, a layer exhibiting optical transmission density sufficient to provide a barrier with respect to incident visible radiation subsequent to photoexposure of the silver halide layer and means for reducing the initial pH of the layer to a second pH below the pK_a of the optical filter agent, which pH is above the pH necessary for diffusion of said image-forming material and, subsequent to substantial transfer

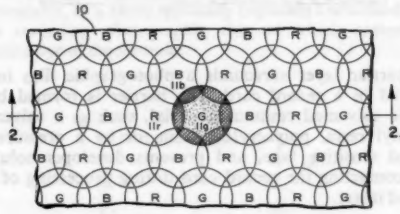
image formation in the reception layer, reducing the pH to a third pH wherein the image-forming material is non-diffusible.

3,734,728

METHOD OF SCREENING A COLOR PICTURE TUBE

Irwin Kachel, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 24, 1970, Ser. No. 66,455
Int. Cl. G03c *5/00, 7/00, 1/66*
U.S. Cl. 96—36.1 **1 Claim**



The screen of a color picture tube is provided with an interlaced pattern of filter components individually transmissive of one of the primary colors, green, blue and red. The filters are applied through a photographic printing process which features a water-based organic photosensitive coating material, including as an ingredient a metallic compound referred to as a luster, and having the property that upon being heated to a predetermined firing temperature the organic constituents evaporate, leaving as a residue an inorganic colorant that is predominantly transmissive to one of the three primary colors.

The filter components are dimensioned to overlap at their peripheral portions and define, in the areas of overlap, a light attenuator. The non-overlapping portion of each filter receives a deposit of a phosphor which emits light of the wavelength to which the associated filter component is transmissive.

3,734,729

DEEP ETCH PRINTING PLATES

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, Ser. No. 849,520, Aug. 12, 1969, now abandoned, and Ser. No. 123,084, Mar. 10, 1971. This application Sept. 27, 1971, Ser. No. 184,252
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.3 **10 Claims**

Method of forming a deep etch lithographic plate which comprises the steps of exposing a hydrophilic metal substrate bearing a light-sensitive layer capable of developing a R_d of 1.0 to 2.2 to actinic radiation to produce a potential R_d of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles; fusing the water-insoluble powder particles to the hydrophilic metal substrate by heating; etching the hydrophilic metal substrate in the areas unprotected by the fused water-insoluble powder particles; applying a film forming, aromatic hydrocarbon insoluble, hydrophobic polymer to the plate from a poor solvent for the fused powder particles; and removing the fused powder particles and hydrophobic polymer adhering thereto with a poor solvent for said hydrophobic polymer.

3,734,730

POLYMETAL PRINTING PLATES

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, Ser. No. 849,520, Aug. 12, 1969, now abandoned, and Ser. No. 123,084, Mar. 10, 1971. This application Sept. 27, 1971, Ser. No. 184,261
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.3 **10 Claims**

Method of forming a polymetal printing plate which comprises the steps of exposing a polymetal plate having a thin hydrophilic metal layer disposed over a hydrophobic metal surface, said hydrophilic metal layer bearing a light-sensitive layer capable of developing a R_d of 1.0 to 2.2 to actinic radiation to produce a potential R_d of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles; fusing the water-insoluble powder particles to the hydrophilic metal subbing layer by heating; etching the hydrophilic metal layer in the areas unprotected by the fused water-insoluble powder particles and removing the fused water-insoluble powder particles.

3,734,731

PRODUCING PRINTED CIRCUITS BY USING POWDER-EMBEDDED COMPOSITION AS ETCH-RESIST

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, Ser. No. 849,520, Aug. 12, 1969, now abandoned, and Ser. No. 123,084, Mar. 10, 1971. This application Sept. 27, 1971, Ser. No. 184,272
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **10 Claims**

Method of forming a printed circuit which comprises the steps of exposing an insulating board bearing a conductive metal subbing layer, said conductive metal layer bearing a light-sensitive layer capable of developing a R_d of 1.0 to 2.2 to actinic radiation to produce a potential R_d of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles from the non-image areas; fusing the water-insoluble powder particles to the metal subbing layer by heating; and etching the metal layer in the areas unprotected by the fused water-insoluble powder particles.

3,734,732

POLYMETAL PRINTING PLATES

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, Ser. No. 849,520, Aug. 12, 1969, now abandoned, and Ser. No. 123,084, Mar. 10, 1971. This application Sept. 27, 1971, Ser. No. 184,280
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.3 **10 Claims**

Method of forming a polymetal printing plate which comprises the steps of exposing a polymetal plate having a thin hydrophobic metal layer disposed over a hydrophilic metal surface, said hydrophobic metal layer bearing a

light-sensitive layer capable of developing a R_d of 1.0 to 2.2, to actinic radiation to produce a potential R_d of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles; fusing the water-insoluble powder particles to the hydrophobic metal subbing layer by heating; and etching the hydrophobic metal layer in the areas unprotected by the fused water-insoluble powder particles.

3,734,733

POSITIVE WORKING PHOTO-THERMOGRAPHIC MATERIALS CONTAINING BI-IMIDAZOLYL COMPOUNDS AND REDUCING AGENTS AND THE USE THEREOF IN COLOR DEVELOPMENT

Albert Lucien Poot, Kontich, Jan Frans van Besauw, Brasschaat, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,612
Claims priority, application Great Britain, Apr. 9, 1970, 16,998/70
Int. Cl. G03c *5/24, 1/00*
U.S. Cl. 96—48 HD **19 Claims**

A recording element carrying a photo-oxidizing bi-imidazolyl compound in chemically reactive contact with a compound having reducing properties is imagewise exposed to activating radiation to effect reaction between the bi-imidazolyl compound in the exposed areas of the element and the reducing compound to destroy the reducing properties of the latter in such exposed areas and thereafter the exposed element is uniformly contacted with an image-forming compound which is reactive on heating with said reducing compound to produce a distinctive coloration and heated so as to produce by such reaction a visible image corresponding to the unexposed areas of the recording element.

3,734,734

DEPROTEINIZING PROTEIN-CONTAINING SOLUTIONS

Alfred Halpern, Great Neck, and Ernest J. Sasmor, Yonkers, both of N.Y., assignors to Synergistics, Yonkers, N.Y.

Division of Ser. No. 872,783, July 7, 1969, and a continuation of Ser. No. 339,443, Jan. 22, 1964, Pat. No. 3,361,769. This application Dec. 29, 1971, Ser. No. 213,763
Int. Cl. C12h *1/00*
U.S. Cl. 99—48 **5 Claims**

Protein-containing solutions are deproteinized by adding a compound having the formula X Al OH2R, wherein X may be the magnesium or calcium ion and R is either the gluconic, glucuronic or galacturonic acid radical.

3,734,735

COLOUR RADIOGRAPHY

Jacques Elie Bories, La Varenne St. Hilaire, France, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Aug. 22, 1969, Ser. No. 852,246
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **22 Claims**

X-ray recording method using photographic material having at least one silver halide emulsion layer and each such layer on color development gives a monochromatic blue dye image. Exposure can be directly to an X-ray image or indirectly by way of fluorescent screens and the like. The blue dye image absorbs strongly in the red spectral region and at least 30% as much in the green spectral region and can be produced by a mixture of color couplers for cyan and magenta. If plural emulsion layers are used, the same color coupler or mixture of color couplers is provided in each layer to give an identical monochromatic blue dye image. The photographic materials per se are also disclosed.

3,734,736

IMPERVIOUS SURROUND FOR FILM INSERT IN RECORD CASE

Robert G. Rudd, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 18,967, Mar. 12, 1970. This application Oct. 5, 1970, Ser. No. 78,135
Int. Cl. G03c *1/76*
U.S. Cl. 96—67 **4 Claims**

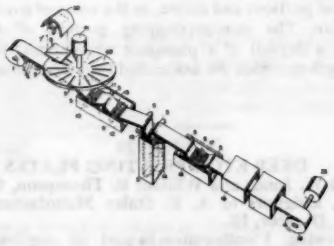
A barrier layer surrounds a photographic film insert mounted in a record card. The barrier is formed by a suitable solvented resinous material, such as a solvented polyvinyl resin, polyacrylate resin, or by a pressure or thermal sensitive tape, and prevents developer solution from contacting the record card during processing of the exposed insert.

3,734,737

PROCESS FOR MANUFACTURING CHROMATIC COLOR SCREEN

John R. Sharp, Quincy, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 50,239, June 26, 1970, which is a continuation-in-part of application Ser. No. 628,940, Apr. 6, 1971, both now abandoned. This application Nov. 16, 1971, Ser. No. 199,248
Int. Cl. G03c *1/84*; G03f *5/00*
U.S. Cl. 96—80 **5 Claims**



A color screen is produced by exposing, either successively or simultaneously, a plurality of photosensitive layers to short duration, high intensity radiation actinic to each layer. The radiation is in a pattern such that an aliquot part of each layer is exposed. The layer is dyed with a selected color. The exposed areas are in side-by-side registration on a transparent backing and form a multicolor screen of general utility in the photographic arts.

3,734,738

SILVER HALIDE EMULSIONS CONTAINING REACTIVE QUATERNARY SALTS NUCLEATING AGENTS

Donald W. Kurtz and Judith M. Harbison, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,709
Int. Cl. G03c *1/28*
U.S. Cl. 96—107 R **9 Claims**

Reactive N-substituted, cycloammonium quaternary salts, wherein the N-substituent includes alkyl radicals

whose terminal carbon atom is additionally substituted with an acyl radical such as a formyl radical, an acetyl radical or a benzoyl radical are useful nucleating agents in direct positive photographic emulsions.

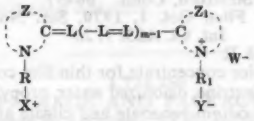
3,734,739

SILVER HALIDE EMULSIONS SENSITIZED WITH CYANINE DYES CONTAINING A QUATERNARY GROUP

Alan L. Borror, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 29, 1971, Ser. No. 167,500
Int. Cl. G03c 1/16, 1/18
U.S. Cl. 96—132 **11 Claims**

The present invention relates to photography and, more particularly, to a novel spectrally (optically) sensitized radiation recording photographic element which comprises a cyanine dye of the formula:



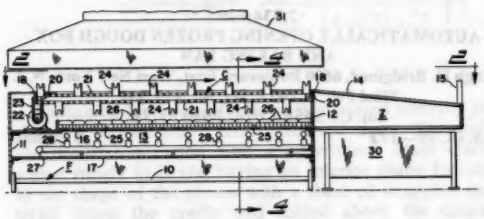
wherein L represents a methine group; *m* represents a positive integer of from 1 to 3, inclusive; Z and Z_1 each represents the nonmetallic atoms necessary to complete a cyanine dye heterocyclic ring system containing a five or six membered heterocyclic nucleus; R and R_1 each represents a divalent acylic cyclic group; X^+ represents a quaternary ammonium, sulfonium or phosphonium group; Y^- represents a $-SO_3^-$ or a $-COO^-$ group; and W^- represents an anion.

3,734,740

CONTINUOUS FOOD COOKING DEVICE

Steven Zenos, 1520 Sagebrush Trail S.E., Albuquerque, N. Mex.

Filed May 24, 1971, Ser. No. 146,157
Int. Cl. A23l 1/31, 1/00
U.S. Cl. 99—1 **21 Claims**



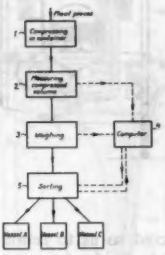
A conveyor moves a train of food items, particularly meat items mounted on skewers, at a substantially constant rate past a heat source of substantially constant intensity toward a discharge point where the food items are collected. The conveyor has indicia marked along the path it traverses indicating predetermined starting points on the conveyor for the food items. The indicia correlate the distances from the starting points to the discharge point with an identifying characteristic of a food item first entered on the conveyor at such starting points, for example, the type of food to be cooked, the extent it is to be cooked, and the like. Preferably, detachable skewer means support the food items on the conveyor and have indicia cooperating with the indicia spaced along the path of travel of the conveyor.

3,734,741

METHOD OF OBTAINING MEAT WITH A PREDETERMINED FAT CONTENT

Hans Christian Larsen, Lyngby, Denmark, assignor to Alfa-Laval AB, Tumba, Sweden

Filed May 28, 1971, Ser. No. 147,795
Claims priority, application Denmark, May 28, 1970, 7,349/70
Int. Cl. A22c 18/00
U.S. Cl. 99—107 **3 Claims**



After ascertaining the fat content of separate quantities of meat by calculating the specific gravity of each quantity, the separate quantities are distributed by way of a selecting step to a plurality of collecting vessels while determining the total fat content of the total meat quantity in each vessel. In the selecting step, each separate meat quantity is directed selectively, with reference to its fat content and according to the total fat content determination, to one of the collecting vessels to obtain a meat mass with a predetermined fat content.

3,734,742

STABILIZED BEVERAGES

Lewis D. Morse, Princeton, and Paul A. Hammes, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 30,978, April 22, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 206,128
Int. Cl. A23l 1/30
U.S. Cl. 99—28 **3 Claims**

A sealed canned or bottled aqueous beverage containing at least about 80 percent water and having a pH of from 2.0 to 3.4, an ascorbic acid content of from 0.056 to 1.120 mg./ml. and a ferrous ion content of from 0.008 to 0.15 mg./ml.

3,734,743

SOUR DOUGH FRENCH BREAD

Leo Kline, Richmond, and Takashi F. Sugihara, Pinole, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 26, 1971, Ser. No. 119,382
Int. Cl. A21d 8/04
U.S. Cl. 99—90 S **9 Claims**

Processes for preparing sour dough French bread using a novel liquid starter which supplies the special microorganisms, *Lactobacillus sanfrancisco* and *Torulopsis holmii*, required for leavening and souring action and which provides many advantages over conventional sponge starters.

3,734,744

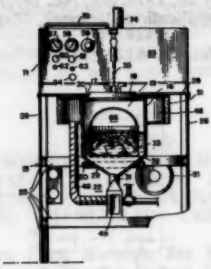
METHOD FOR PRESSURIZED COOKING OF FOOD IN HIGH-TEMPERATURE NON-AQUEOUS LIQUID

Charles Jere Albright, 313 W. North Ave., Chicago, Ill. 60610

Continuation of abandoned application Ser. No. 751,127, Aug. 8, 1968. This application Dec. 14, 1970, Ser. No. 98,166
Int. Cl. A47j 37/12
U.S. Cl. 99—107 **21 Claims**

A method for the pressurized cooking of foods in high-temperature, non-aqueous liquids for a time-controlled

period in which a nearly-instant separation of the cooked foods and the hot liquid at the termination of each cooking period is effected so as to retain in the cooked food the juices inherent in the food.



3,734,745

MULTI-LAYERED, MULTI-COLORED DESSERTS

Robert R. Cassanelli, Yorktown Heights; Ronald P. Wauters, Vails Gate; Anastasia C. Wirchansky, Yonkers, all of N.Y., and Clement R. Wyss, Park Ridge, N.J., assignors to General Foods Corporation, White Plaines, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,169
Int. Cl. A23l *1/04*
U.S. Cl. 99—130 7 Claims

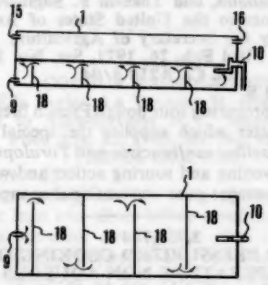
Multi-layered desserts having differently colored layers are prepared from a single dry whippable composition comprising gelatin, fat, sugar, emulsifiers for the fat, a fat soluble coloring agent, and a water soluble coloring agent.

3,734,746

PROCESS FOR CONTINUOUS PRODUCTION OF VINEGAR BY SURFACE FERMENTATION

Yukio Yasui, Wataru Ikoga, Akihiko Mori, Kimio Date, and Tadaaki Adachi, Tokyo, Japan, assignors to Kewpie Jyozo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1971, Ser. No. 120,662
Claims priority, application Japan, Apr. 28, 1970, 45/35,951
Int. Cl. C12j *1/04*
U.S. Cl. 99—147 6 Claims



A continuous process for the production of vinegar may be carried out in a single fermentation vessel or a plurality of fermentation vessels intercommunicated in series. In either case, the vessel or vessels are furnished with a plurality of flow regulating means thereby to ensure the rapid and uniform proceeding of the oxidative fermentation reaction in all parts of the vessel or vessels. Ethyl alcohol-containing liquid is firstly introduced into the above vessel or vessels and is inoculated with an overlayed layer of acetic acid bacteria which have been cultured in a suitably prepared nutrient medium and adapted to acidic broth. Succeedingly, fresh ethyl alcohol-containing liquid is continuously introduced into the single vessel or the first of the series-intercommunicated vessel or the first of the series-intercommunicated vessels, and the substantially fully fermented liquid is continuously withdrawn from the vessel or the last of the vessels at an equal rate to the rate of the introduction of the fresh ethyl alcohol-containing liquid.

3,734,747

AEROSOL COLOR MIXTURE AND METHOD OF MAKING SAME

David F. De Felice, 45 Mount Pleasant Ave., Stratford, Conn. 06497

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,366
Int. Cl. A23l *1/26*
U.S. Cl. 99—148 R 12 Claims

An aerosol color concentrate for thin film color coating which contains dextrine, deionized water, propylene glycol, an organic dye, sodium benzoate and citrate and a drying agent. The concentrate is stable under pressurized as well as atmospheric conditions and does not precipitate dextrin.

3,734,748

METHOD OF PREVENTING THE SPOILAGE OF BREAD

Ryuzo Ueno, Nishinomiya, Tetsuya Miyazaki and Toshio Matsuda, Itami, and Shigeo Inamine and Shinichiro Arai, Nishinomiya, Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,689
Int. Cl. A21d *2/14*
U.S. Cl. 99—150 R 6 Claims

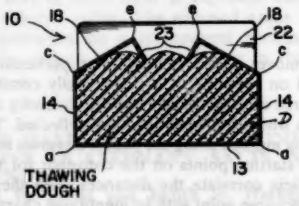
A method of preventing the spoilage of yeast leavened bread which consists of incorporating in the dough a mixture of an acetate and an acid compound which is crystalline at room temperature, the latter being coated with at least one coating agent of the group consisting of animal and vegetable oils and fats, monoglycerides, diglycerides, waxes and paraffin.

3,734,749

AUTOMATICALLY OPENING FROZEN DOUGH BOX AND BAKING PAN

Hugh H. Bridgford, 6600 Boulevard East, West New York, N.J.

Filed Feb. 3, 1971, Ser. No. 112,331
Int. Cl. B65b *25/16*; B65d *81/34*
U.S. Cl. 99—172 5 Claims



A frozen yeast-containing developed dough fills a box-like folded box or receptacle made of a cardboard material. The receptacle is formed with two top opposing rectangular clo-

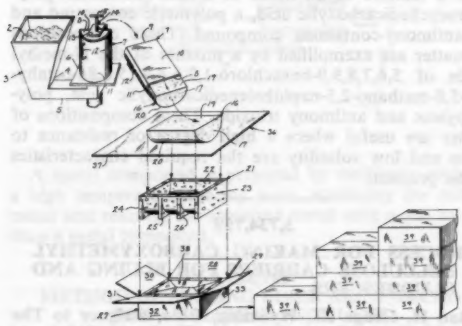
sure panels which together form the top wall of the receptacle. Integral side bottom, and end walls are also provided. When the mass of dough is permitted to thaw and rise, it presses upwardly against the top, rectangular closure panels to separate them and to effect automatic and gradual opening of the receptacle as baking proceeds. The top rectangular closure panels are each provided with an elongated scored line designed to be preliminarily manually folded inwardly to form elongated, outer hook panels. When the dough mass rises, it also catches under the hook panels and draws the opposing rectangular closure panels inwardly together at the same time as the closure panels are pressed upwardly. This inward drawing constituted a force which off-sets the tendency of the expanding mass of dough to force the receptacle side walls outwardly. As a result, numerous advantages accrue. For example, a lighter weight of cardboard material may be employed, both for economy and for providing a better shaped and more quickly baked loaf. Further, the inward drawing together of the receptacle side walls prevents those side walls from bowing outwardly and imparting an undesirable corresponding bow shape to the loaf side walls.

3,734,750

CHEESE PACKAGE AND PACKAGING PROCESS

Harold H. Ludeman, 23 W. Jefferson St., Black River Falls, Wis.

Filed June 18, 1969, Ser. No. 834,375
Int. Cl. A23c *19/16*
U.S. Cl. 99—178 **5 Claims**



Packaging for semi-soft cheese is disclosed whereby the cheese is formed into a semi-cylindrical shape. The package includes a carton with a polystyrene foam cradle seated snugly in it and having an interior shape forming to the shape of the cheese with a sheet of wrapping material lining the cradle and folded about the cheese. When the carton is closed, the completed packages are stacked.

3,734,751

PREPARATION OF DEEP-FROZEN VEGETABLES

Bengt Lennart Bengtsson, Bjuv, Sven Ingmar Walton Bosund, Halsingborg, and Bertil Hylmo, Bjuv, Sweden, assignors to Produits Findus S.A., Vevey, Switzerland

No Drawing. Filed Aug. 25, 1970, Ser. No. 66,888
Claims priority, application Great Britain, Aug. 25, 1969, 42,167/69
Int. Cl. A23b *7/04*
U.S. Cl. 99—193 **13 Claims**

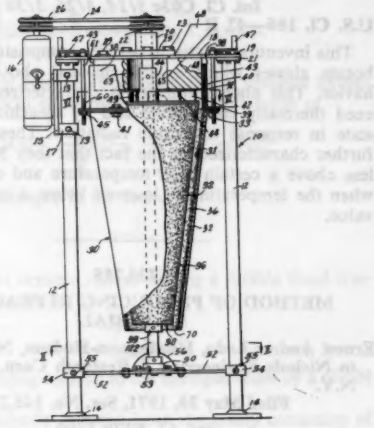
Deep-frozen comminuted leaf vegetables such as spinach are provided in particulate form and have a reduced water content. Other features of the invention are disclosed in the following specification.

3,734,752

PROCESSING CEREAL GRAINS AND SEEDS BY A SEMI-DRY MILLING METHOD

Verl E. Headley, Naperville, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Sept. 14, 1970, Ser. No. 72,061
Int. Cl. B02c *3/00*
U.S. Cl. 99—233.3 **9 Claims**



Covers equipment and processes that are useful in degerminating or dehulling kernels of cereal and seeds. A preferred embodiment of the equipment has a frame on which a housing is mounted. A rotary assembly is mounted for rotation within a chamber in the housing. The rotary assembly consists of a vaned impeller that is disposed to confront a generally cylindrical impact surface in the housing chamber, and a rotor member that is secured below the impeller and that has a surface that is disposed in spaced relationship to the confronting surface of the housing chamber. These confronting surfaces define an annulus therebetween.

In operation of the equipment for processing material including kernels of cereal or seeds, the material is fed into a central portion of the impeller, accelerated by the impeller radially outwardly within the chamber to engage against the impact surface and to move along it, and then is immediately passed downward through the annular passage in a generally helical path.

For dehulling, the material is subjected to progressively milder abrading action as it passes through the annular passage, and then is discharged from the machine. For degerminating, the material is subjected to a series of impacts as it passes through the annular passage.

3,734,753

PLASTICIZED SULFUR COMPOSITIONS

Carl C. Greco, Garnerville, and Donald J. Martin, Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 536,657, Mar. 23, 1966. This application Feb. 4, 1969, Ser. No. 796,561
Int. Cl. C09d *11/00, 13/00*
U.S. Cl. 106—19 **3 Claims**

A plasticized sulfur composition comprising the reaction product of sulfur and a dimercaptan of the formula:

HS—A—SH

wherein A is selected from the group consisting of alkylene, chalcogen interrupted alkylene and diester radicals.

3,734,754

THERMALLY DARKENING PHOTOCHROMIC GLASS

Lyman James Randall and Thomas P. Seward III, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,270

The portion of the term of the patent subsequent to Nov. 21, 1989, has been disclaimed

Int. Cl. C03c *3/14, 3/26, 3/30*

U.S. Cl. 106—47 R 5 Claims

This invention relates to articles comprising lanthanum borate glasses which exhibit unusual photochromic behavior. This photochromism is characterized by a darkened thermally stable state and by bleaching to a clear state in response to actinic radiation. These glasses are further characterized by the fact that they become colorless above a certain high temperature and colored again when the temperature is lowered below a certain critical value.

3,734,755

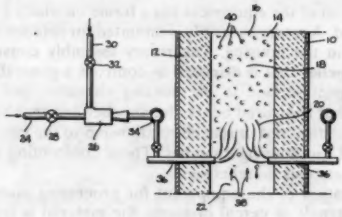
METHOD OF PRODUCING REFRACTORY MATERIAL

Ernest Andres Lado, Hastings-on-Hudson, N.Y., assignor to Nichols Engineering & Research Corp., New York, N.Y.

Filed May 20, 1971, Ser. No. 145,218

Int. Cl. F27b *1/00*

U.S. Cl. 106—73.4 9 Claims



This disclosure relates to the production of refractory material in a vertical shaft forced draft kiln wherein a controlled quantity of water or steam is introduced with the combustion fuel into the burning zone of the kiln while passing said refractory material from the upper to the lower end thereof through successive preheating, burning and cooling zones, thereby effecting a close control over the flame temperature.

3,734,756

FINELY DIVIDED ALKALI METAL SILICATE GLASS

Richard H. Pierce, Broomall, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed June 16, 1971, Ser. No. 153,806

Int. Cl. C04b *35/16*

U.S. Cl. 106—74 10 Claims

A method has been developed to prepare alkali metal silicate glasses of small particle size that dissolve readily and do not contain significant amounts of impurities from the grinding equipment. The method consists of casting molten alkali metal silicate glass in a thin sheet or film which is then thermally stressed and fractured before grinding.

3,734,757

THIOCARBOHYDRAZONE FUNGICIDES

David M. Wiles, and Tony Suprunchuk, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 7, 1970, Ser. No. 62,131

Int. Cl. A01n *9/12, 17/12*; C08b *29/00*

U.S. Cl. 106—186 7 Claims

A fungicidal composition, method of application and protected articles are described where the active fungicide (or fungistatic compound) is a mono- or dithiocarbohydrazone which may be prepared by condensation of thiocarbohydrazide with an aldehyde or ketone.

3,734,758

NOVEL FLAME RETARDANT COMPOSITIONS OF MATTER

Henryk A. Cyba, Evanston, and Allen K. Sparks, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 757,763, Sept. 5, 1968. This application May 6, 1971, Ser. No. 141,028

Int. Cl. C08b *27/04*

U.S. Cl. 106—193 R 10 Claims

Novel flame retardant compositions of matter comprise a mixture of an imide of a halo-substituted polyhydrocyclicdicarboxylic acid, a polymeric compound and an antimony-containing compound. These compositions of matter are exemplified by a mixture of the N-methyl imide of 5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboxylic acid, polypropylene and antimony trioxide. These compositions of matter are useful where a high degree of resistance to flame and low volatility are the required characteristics of the product.

3,734,759

PROCESS FOR MAKING CARBOXYMETHYL CELLULOSE CARRIERS FOR BLUING AND FLUORESCERS

Burton H. Gedge III, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed May 20, 1971, Ser. No. 145,576

Int. Cl. C08b *27/76*

U.S. Cl. 106—193 4 Claims

A process of producing dyed alkali metal carboxymethylcellulose via a slurry process wherein cellulose is dyed after adding it to an alkali hydroxide-solvent-water mixture and prior to reacting it with monochloroacetic acid.

3,734,760

PROCESS FOR THE PRODUCTION OF AMYLOSE FILMS

Hiromi Hijiya and Mikihiko Yoshida, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan

No Drawing. Filed July 27, 1971, Ser. No. 166,640

Claims priority, application Japan, July 28, 1970, 45/66,004

Int. Cl. C08b *25/02*

U.S. Cl. 106—210 8 Claims

The production of transparent, stable and strong amylose films comprising hydrolysis of a gelatinized solution

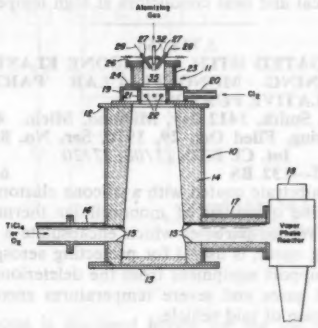
of amylomaize starch or ordinary starch with the action of alpha-1,6-glucosidase, precipitating by cooling the reaction mixture, recovering the formed starch precipitates which consist exclusively of amylose molecules, adding to the resultant plasticizer in which a maltitol with a purity of over 50% is present or a plasticizer in which a mixture of said maltitol product and another plasticizer is present, and forming amylose films with said mixture of amylose and plasticizers.

3,734,761

PROCESS FOR PRODUCING TITANIUM DIOXIDE PRODUCT CONTAINING ALUMINUM OXIDE

John V. Becker, New York, N.Y., and Arthur A. Bellinger, Willingboro, N.J., assignors to National Lead Company, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,438
Int. Cl. C01g *23/04*
U.S. Cl. 106—300 **2 Claims**



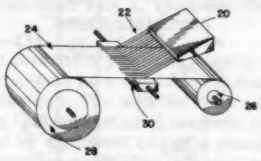
A metal compound is prepared by melting a metal in a high temperature heating zone, atomizing the molten metal and reacting the atomized metal with a gas to produce a metal compound.

3,734,762

METHOD OF MAKING FIBER REINFORCED METAL MATRIX PRODUCTS

Lloyd E. Hackman, Worthington, and Carroll E. Mobley, Upper Arlington, Ohio, assignors to Ribbon Technology Corporation, Columbus, Ohio

Filed June 25, 1971, Ser. No. 156,694
Int. Cl. C23c *7/00*
U.S. Cl. 117—37 R **4 Claims**



A method of casting a metal fiber ribbon onto a metal matrix foil to form a fiber reinforced metal matrix specimen. The method is characterized by impinging a molten metal onto the moving surface of metal matrix foil in such a manner that the metal ribbon fiber adheres to the matrix foil.

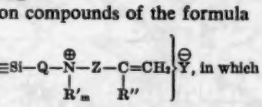
3,734,763

CATIONIC UNSATURATED AMINE-FUNCTIONAL SILANE COUPLING AGENTS

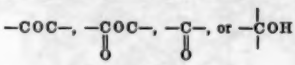
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 825,035, May 15, 1969. This application Dec. 17, 1970, Ser. No. 99,228
Int. Cl. B44d *1/14*; C07f *7/02*; C03c *25/02*
U.S. Cl. 117—72 **16 Claims**

Organosilicon compounds of the formula



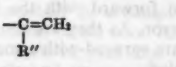
Q is a divalent hydrocarbon radical or a divalent hydrocarbon radical containing oxygen in the form of



groups or nitrogen in the form of

groups;

Z is a divalent organic radical having a double bond conjugated with the



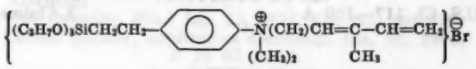
moiety, Z being bonded to the nitrogen atom by a C—N bond;

R′ is independently selected from the group consisting of the hydrogen atom, lower alkyl radical or a heterocyclic organic compound containing the nitrogen atom as a ring member;

m is an integer of 1 or 2;

R″ is the hydrogen atom or a lower alkyl radical; and Y is an acid anion; are disclosed.

The compounds, for example



as coupling agents for promoting the adhesion of organic polymers to solid inorganic surfaces.

3,734,764

COATING COMPOSITIONS AND PROCESSES

Lewis S. Miller, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 30, 1970, Ser. No. 93,857
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **17 Claims**

A carboxylic acid chloride or bromide, a sulfonyl chloride or bromide, cyanuric chloride, calcium hypochlorite or phosphorus oxychloride and optionally a buffering pigment are combined with a liquid, acrylate ester resin curable by exposure to high-energy ionizing radiation to yield a coating composition which upon being cured in air by exposure to ionizing radiation yields a coating having an essentially tack-free surface.

3,734,765

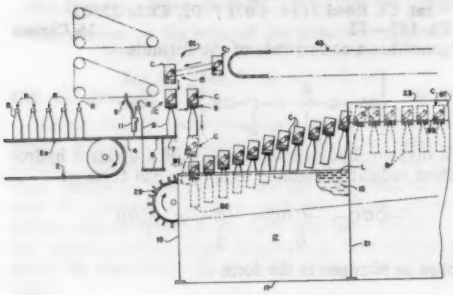
BOTTLE COATING

Robert C. Russell and Richard W. Entler, Columbus, Ohio, assignors to Liberty Glass Company, Sapulpa, Okla.

Filed Oct. 12, 1971, Ser. No. 188,157
Int. Cl. B44d *1/06*; C03c *17/32*
U.S. Cl. 117—94 **10 Claims**

A system of coating bottles in which rows of bottles issuing from a lehr, the bottles in each row standing upright side-by-side, are picked up by their necks, lowered

into a bath of a liquid coating composition, e.g., a containment coating composition, for dip coating thereof on the outside, then moved forwardly through the bath and raised to withdraw them from the bath and, still gripped as specified, moved through a heating zone in upright



position for heating the coating on the bottles. The bottles are then released and deposited on a conveyor for moving them forward with the bottles standing upright on the conveyor. As they are moved forward by the conveyor, they are sprayed with a molten plastic for lubricity and then cooled.

3,734,766

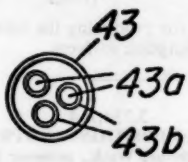
BAGASSE FIBER PRODUCT AND PROCESS

Roland Botz, San Juan, Puerto Rico, assignor to Plasti-Fiber Formulations, Inc., Mercedita, Puerto Rico

Application Oct. 9, 1969, Ser. No. 866,123, now Patent No. 3,694,308, which is a continuation-in-part of abandoned application Ser. No. 758,903, Sept. 10, 1958. Divided and this application Nov. 2, 1970, Ser. No. 86,322

Int. Cl. D06m *11/04*

U.S. Cl. 117—100 A **3 Claims**



Bagasse is treated with an aqueous solution of alum and defibrated to give a fibrous product suitable for the reinforcement of resin bodies. The fiber can also be pulverized to yield a flour suitable for use as a filler in resin bodies. The treatment also produces a clean, sugar free, moisture resistant, low density cellular pith material suitable for manufacturing insulation and acoustical materials, as a filler for synthetic foam products, and as a filler for animal feed formulations.

3,734,767

CERAMIC TREATING PROCESS AND PRODUCT PRODUCED THEREBY

Peter K. Church, Cascade, and Oliver J. Knutson, Colorado Springs, Colo., assignors to Kaman Sciences Corporation, Colorado Springs, Colo.

No Drawing. Continuation of application Ser. No. 642,704, June 1, 1967. This application June 18, 1970, Ser. No. 63,998

Int. Cl. C04b *41/24*

U.S. Cl. 117—123 B **11 Claims**

A new ceramic treatment process and product and, more particularly, a process for treating underfired porous partially vitrified relatively soft machinable refractory ceramic materials to produce hardened dimensionally stable end products at relatively low temperatures and the ceramic materials produced thereby which are suitable for application as bearings for undersea submergence, low temperature bearings for arctic vehicular and machinery applications, precision bearings for space use and liquid metal lubricated systems. The soft ceramics can be machined and shaped in the soft state and hardened by the process of this invention at temperatures well below normal vitrification temperatures with virtually no change in dimensions from the machined untreated ceramic to the treated and hardened end product. Other products produced by the process of this invention produce articles having a very dense surface capable of taking a high polish and other products have resulted in an abrasive or polishing stone having superior qualities to those of the Arkansas stones in respect to both speed of metal removal and degree of polishing or sharpening. In addition, coarser or finer grades are obtainable compared to a single grade of Arkansas stone. Other products produced by this process have negative temperature coefficients becoming very good electrical and heat conductors at high temperatures.

3,734,768

METAL COATED WITH A SILICONE ELASTOMER CONTAINING MONOCELLULAR PARTICLES FOR ABLATIVE PURPOSES

Frank A. Smith, 1412 Jay, Midland, Mich. 48640

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,231

Int. Cl. B32b *15/08, 27/20*

U.S. Cl. 117—132 BS **6 Claims**

A metal substrate coated with a silicone elastomer containing specific quantities of monocellular thermoplastic resinous polymeric particles which encapsulate a volatile liquid raising agent, is useful for protecting aerospace vehicles and support equipment from the deleterious effects of turbulent gases and severe temperatures encountered in the operation of said vehicle.

3,734,769

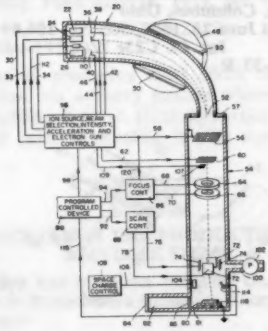
METHOD OF FORMING MICROELEMENTS

Tomas Hirschfeld, Thousand Oaks, Calif., assignor to Block Engineering, Inc.

Original application Apr. 13, 1967, Ser. No. 630,754. Divided and this application Aug. 6, 1970, Ser. No. 61,807

Int. Cl. B44d *1/18, 1/50*

U.S. Cl. 117—212 **8 Claims**


ION SOURCE BEAM SELECTION, INTENSITY, ACCELERATION AND ELECTRON GUN CONTROLS
FOCUS CONT
PROGRAM CONTROLLED DEVICE
SC AN CONT
SPACE CHARGE CONTROL

A method of forming microelements of a given configuration by producing in vacuum a number of separate ion beams of materials, each beam being directed one at a time to a common path. Each beam is intensity controlled and is electrostatically focussed onto a common work piece. The focussed beam is deflected laterally to

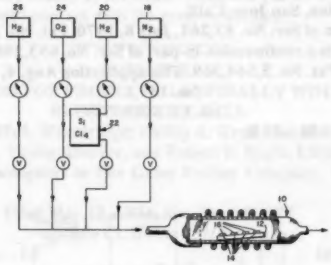
trace out a two-dimensional aspect of the configuration of the microelement, the ions being discharged along the trace to write-in the microelement, multiple layers being formed, if desired by depositing material on top of previously discharged ions. The method is preferably performed electronically in accordance with a sequence of instructions determining the parameters for a given type of microelement.

3,734,770

NITROGEN NUCLEATION PROCESS FOR THE CHEMICAL VAPOR DEPOSITION OF POLYCRYSTALLINE SILICON FROM $SiCl_4$

James B. Price, Phoenix, and William C. Roman, Tempe, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 14, 1970, Ser. No. 97,811
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **6 Claims**



A process is disclosed herein for the use of nitrogen in a nucleation process for the chemical vapor deposition of polycrystalline silicon from $SiCl_4$. After establishing the desired furnace temperature at a single temperature lying within the range of 900° C. to 1200° C., the system is purged with nitrogen and hydrogen. After the system has been purged, the nitrogen flow is stopped and the $SiCl_4$ flow is started simultaneously. The overlap of nitrogen and $SiCl_4$ within the system causes nucleation from which a very fine grain layer of polycrystalline silicon is grown.

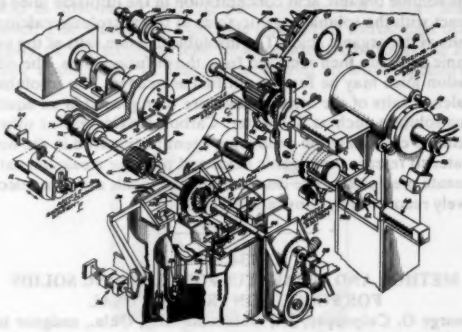
3,734,771

METHOD FOR PRODUCING A PROTECTIVE COATING ON THE SURFACE OF A MANUFACTURED ARTICLE

Harold L. Fritzsche, Fort Wayne, Ind., assignor to General Electric Company

Original application Feb. 27, 1969, Ser. No. 803,036, now Patent No. 3,607,553, dated Sept. 21, 1971. Divided and this application July 1, 1970, Ser. No. 51,637
Int. Cl. H01f *3/02*
U.S. Cl. 117—234 **12 Claims**

Method for forming a protective coating on an article of manufacture, such as a core formed from a stack of magnetic laminations. The material from which the protective coating is formed contains magnetic particles. Each core is carried by a different one of a plurality of article support and masking assemblies mounted on a first conveyor; e.g., a first rotary indexing assembly which rotates each of the support and masking assemblies sequentially through an Article-Loading Station, Material-Applying Station, Article-Transferring Station, and an Article Support-Cleaning Station. At the Article-Transferring Station, the core is transferred to a Magnetizing-Article Compressing Station, which transports the coated core to an Article-Unloading Station on a second conveyor. At the Magnetizing and Compressing Station, a magnetic field magnetically compresses the laminations and concurrently magnetically draws the protective coating material to selected surfaces of the core in order to form an increased thickness of coating material on those selected surfaces. Each of the support and masking assemblies is connected through a rotary valve to a fluid pressure source which



feeds fluid through the assembly to accomplish masking and cooling of selected regions of the core. At the Article Support-Cleaning Station each support and masking assembly is mechanically cleaned to remove any residual protective coating material therefrom before the assembly is again indexed to the Article-Loading Station.

3,734,772

MAGNETIC RECORDING MEDIA

Georg Schnell and Heinz Stritzinger, Ludwigshafen, Guenter Vaeth, Limburgerhof, Werner Grau, Lampertheim, and Fritz Hammon and Manfred Hopp, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,243
Claims priority, application Germany, Jan. 20, 1970, P 20 02 318.1
Int. Cl. H01f *10/00*
U.S. Cl. 117—235 **1 Claim**

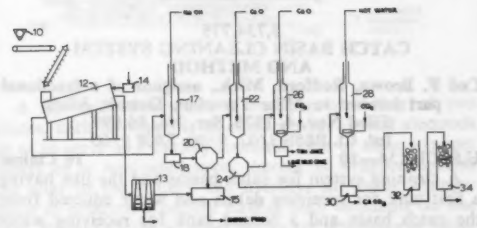
Magnetic recording media in tape form having on the back of the substrate a pattern of raised dots with a high coefficient of friction which improve the winding properties.

3,734,773

PROCESS FOR SELECTIVELY PURIFYING SUGAR BEET DIFFUSION JUICE AND BY-PRODUCT RECOVERY OF VALUABLE ORGANIC ACIDS THEREFROM

Boyd E. Haley, 428 W. Spring Street, West Haven, Conn.

Filed Aug. 2, 1971, Ser. No. 167,995
Int. Cl. C07c *53/00, 55/00*; C13d *3/00*
U.S. Cl. 127—48 **5 Claims**



A process for selectively purifying sugar beet diffusion juice in which the raw diffusion juice is first neutralized to minimize

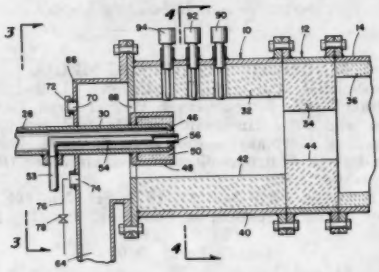
inverted sugar formation and stabilize the colloidal content without precipitating the soluble organic acids. The neutralized diffusion juice is then subjected to high centrifugal forces to separate the colloidal and particulate content from the diffusion juice. After the colloidal and particulate solids are removed, the clarified diffusion juice is contacted with a stoichiometric equivalent or slight excess of lime based upon the soluble organic acid concentration in the diffusion juice to react with the soluble organic acids to form insoluble calcium salts of the organic acids. The insoluble calcium salts of the organic acids are then removed from the diffusion juice. The diffusion juice may be further purified as needed. The insoluble calcium salts of the organic acids are then placed in an aqueous solution such as hot water. Carbon dioxide gas or other suitable carbonate ion producing agent is dissolved in the hot water to release the organic acids and produce a calcium carbonate precipitate. The dissolved organic acids are then selectively recovered by conventional means.

3,734,774

METHOD AND APPARATUS FOR CLEANING SOLIDS FOR POLLUTION FREE DISPOSAL

George O. Culpepper, Jr., Oklahoma City, Okla., assignor to Jim W. Kendall and James W. Pitts, Oklahoma City, Okla., part interest to each

Filed Jan. 29, 1971, Ser. No. 110,826
Int. Cl. B08b *7/00*
U.S. Cl. 134—2 **3 Claims**



A system for burning a hydrocarbon coating, such as an oil coating from the surface of particulate solid material such as sand in a pressurized firing zone or firing chamber where the solids are introduced under pressure into the firing zone. An air-fuel mixture is introduced into the firing zone and burned therein. Immediately downstream of the firing chamber is a doughnut restriction which confines the combustion to the firing chamber. The ratio of air to fuel in the air-fuel mixture is always such that the fuel will be completely burned. The system will be provided with controls to shut the unit down when the temperature goes above or below a predetermined temperature and also to shut the system down when a lack of complete combustion of the fuel is indicated.

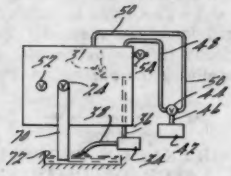
3,734,775

CATCH BASIN CLEANING SYSTEM AND METHOD

Ced F. Brown, Redford, Mich., assignor of a fractional part interest to Mike Torosian, Detroit, Mich.

Filed Nov. 4, 1970, Ser. No. 86,899
Int. Cl. B08b *3/02, 9/00;* **E03f** *9/00*
U.S. Cl. 134—10 **16 Claims**

A cleaning system for catch basins and the like having a first tank for receiving debris and water educted from the catch basin and a second tank for receiving water from the first tank via a transfer valve communicating the first and second tanks. As a preliminary step, water may be passed from the first tank into the catch basin by gravity flow to break up the debris therein. The fluid in the second tank may be ejected into the catch basin under pressure to loosen and agitate the debris in the catch



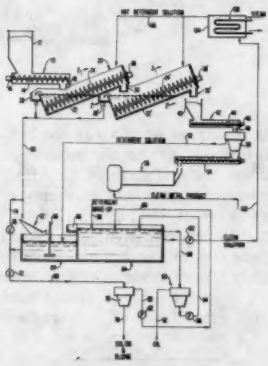
basin concurrently with the eduction of water and debris from the catch basin.

3,734,776

CLEANING OIL LADEN METAL WASTE TO RECOVER THE METAL AND RECLAIM THE OIL

James R. Keogh, Jr., Philadelphia, Pa., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 53,261, July 8, 1970, Pat. No. 3,639,172, which is a continuation-in-part of Ser. No. 693,298, Dec. 26, 1967, Pat. No. 3,544,369. This application Aug. 4, 1971, Ser. No. 169,117
Int. Cl. B08b *7/04*
U.S. Cl. 134—25 R **11 Claims**



Oil laden metal waste such as turnings, chips and the like are cleaned to remove oil and other impurities from the metal waste enabling recovery of the metal and reclaiming of the oil. The cleaning is achieved through counterflow of a detergent solution in a wash bath, removing the cleaned metal waste from the bath and separating a substantial quantity of the remaining moisture therefrom, and removing the detergent solution from the wash bath and running it through a rehabilitation circuit where it is subjected to centrifugal force to separate sludge and oil from the solution. Then concentrated make up detergent solution is added, the make up and restored detergent solution heated and returned from the rehabilitation circuit to the wash bath.

3,734,777

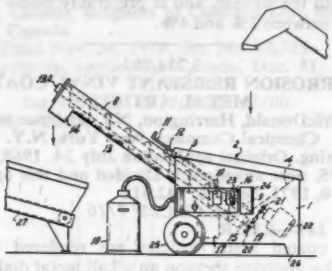
APPLYING A PRESERVATIVE TO GRAIN OR THE LIKE

John Bratschitsch, Hamilton, Ontario, Canada, assignor to The Lely Corporation, Wilson, N.C.

Filed Dec. 7, 1970, Ser. No. 95,854
Int. Cl. B05c *5/00*
U.S. Cl. 134—132 **7 Claims**

An implement for applying a preservative to grain or the like, comprising a frame supporting a hopper, means for ap-

plying the preservative and conveyor means for discharging the grain or the like from said hopper. The conveyor means is located in a space which adjoins the hopper near its lower



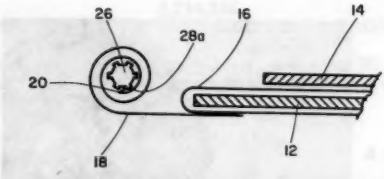
side. The means for applying the preservative comprises at least one spray nozzle by means of which the preservative can be brought into contact with the grain or the like.

3,734,778

METHOD FOR PRODUCING A SPIRALLY WOUND ELECTROLYTIC CELL

Leonard F. Huf, Wheatridge; Phillip A. Grossman, Lakewood; Roland L. Young, Denver, and Robert E. Stark, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed May 10, 1971, Ser. No. 141,877
Int. Cl. H01m *35/16*
U.S. Cl. 136—13 **16 Claims**



An electrolytic cell pack consisting for instance of opposite polarity electrodes and alternate interposed separator is spirally wound by (a) attaching a thin flexible leader tab having a folded end to the cell pack, (b) curling the folded end of the leader tab in a spiral manner, (c) bringing a winding mandrel next to the thus formed curl and rotating the mandrel in the direction of the curled tab to thereby uncurl the leader tab and engage its folded end into a peripheral receiving portion of the mandrel, and (d) further rotating the mandrel to form the spiral wound cell pack. The described winding method is particularly suitable for spirally winding under firm stack pressure relatively small diameter cell packs such as may be required in rechargeable alkaline battery cells. The stack pressure achieved by the winding method is maintained by inserting a retainer in the axial void of the cell pack.

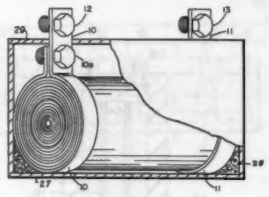
3,734,779

SPIRAL ELECTRODE STORAGE BATTERY WITH IMPROVED ELECTRODE ASSEMBLY CONSTRUCTION AND METHOD OF MAKING

Mark Shoeld, 2140 E. Graves Ave., Orange City, Fla. 32763

Filed Jan. 20, 1972, Ser. No. 219,370
Int. Cl. H01m *35/16*
U.S. Cl. 136—13 **14 Claims**

A lead-acid storage battery of the jelly-roll type is produced by rolling upon a mandrel two electrode strips, each electrode strip comprising a pair of membranes of controlled microporosity with a sheet of pure lead provided with a plurality of spaced perforations interposed between the membranes of each pair. A spreadable mass of colloidal active positive electrode material mixed with acid is introduced into the perforations of one lead sheet and a similar mass of negative electrode material mixed with acid is introduced into the perforations of the other lead sheet. The spreadable electrode material is introduced centrally of the strips of lead in an amount controlled to fill only about 80% of the apertures and to leave apertures



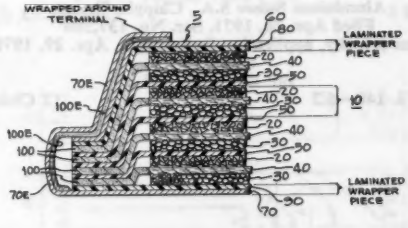
adjacent the edges of the strip empty or partially filled to provide for expansion. At one edge of each electrode strip the lead projects beyond the membranes and at the other edge the membranes project beyond the lead with strips of polyethylene lying between the projecting portions of the membranes. There is also wound up with the electrodes strips of lead so as to fill the spaces between the projecting portions of lead of electrodes of like polarity. After winding is complete, the jelly-roll is further wrapped with polyethylene and the projecting portions of lead at each side of the jelly roll are gripped by an embracing clamp.

3,734,780

FLAT CELL BATTERY WITH BOTH TERMINALS ON ONE FACE

John M. Bilhorn, Edgerton, and Bernard C. Bergum and Kent V. Anderson, Madison, Wis., assignors to ESB Incorporated

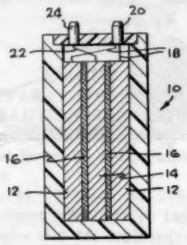
Filed June 25, 1971, Ser. No. 156,804
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 **7 Claims**



A flat cell battery has a wrapper consisting of two pieces, each of which is in contact with an end electrode so as to serve as a battery terminal. One of these wrapper pieces or a laminated layer thereof is wrapped around the edge of the battery and overlays the other wrapper piece to produce a battery having both terminals on one face. Preferably the wrapper pieces are laminates of metal and electrically conductive plastic, with the plastic being in contact with the end electrodes and an extension of the metal in the laminate serving as the terminal which is wrapped around the edge of the battery. The wrapped

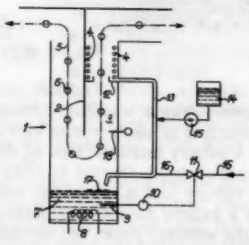
around extension, which must be electrically insulated from the wrapper piece over which it is overlaid, may be secured to the other wrapper piece by nonconductive adhesives or heat seals.

3,734,781
LOW-GASSING HIGH STRENGTH BATTERY SEPARATOR AND METHOD OF PRODUCTION
Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Oct. 19, 1970, Ser. No. 81,827
Int. Cl. H01m 3/00
U.S. Cl. 136—146 **22 Claims**



Production of inorganic porous sintered battery separator substantially reducing formation of gas when in contact with a zinc electrode, and having a dendrite formation inhibiting effect on such zinc electrode, permitting long cycle life of a high energy density battery such as a silver-zinc or nickel-zinc battery, and providing a sealed battery, produced by firing or sintering a compacted magnesium silicate-iron silicate composition, e.g., derived from the mineral olivine, and containing combined lead, e.g., as lead silicate, at temperature ranging from about 1,000°C to about 1,300°C in non-oxidizing atmosphere, e.g., a carbon monoxide-carbon dioxide atmosphere, to produce a porous sintered membrane consisting essentially of magnesium silicate, iron silicate and combine lead, e.g., in the form of lead silicate, the iron content thereof being substantially entirely in ferrous form.

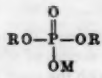
3,734,782
PROCESS FOR TREATING SURFACES OF ALUMINIUM AND ALUMINIUM ALLOYS
René Laroche, Beaurepaire, France, assignor to Aluminium Suisse S.A., Chippis, France
Filed Apr. 26, 1971, Ser. No. 137,566
Claims priority, application Switzerland, Apr. 29, 1970, 6,420/70
Int. Cl. C23f 7/06
U.S. Cl. 148—6.3 **12 Claims**



A surface layer of aluminium hydrate is formed by exposure of an aluminium surface to a gaseous mixture of water, an organic solvent, and a volatilized alkaline catalyst. The percentage by weight of water in the mixture is less than the percentage by weight of an azeotrope of water with the solvent, and is preferably below 10%, for example between 2% and 4%.

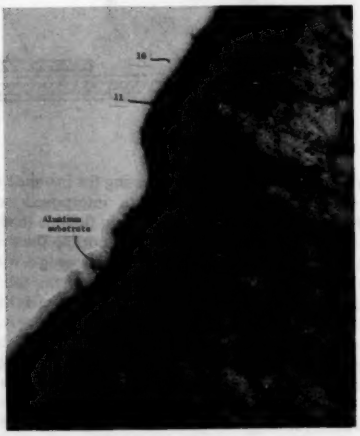
3,734,783
CORROSION RESISTANT VINYL COATED METAL ARTICLES
Harold McDonald, Harrington, N.J., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application July 24, 1968, Ser. No. 747,095, now abandoned. Divided and this application May 10, 1971, Ser. No. 142,011
Int. Cl. C23f 7/10
U.S. Cl. 148—6.15 R **6 Claims**

Vinyl coated metal articles are rendered corrosion resistant by applying thereon an alkali metal dialkyl phosphate of the formula:



wherein R is an alkyl group containing from about 8 to about 16 carbon atoms inclusive, and M is an alkali metal ion.

3,734,784
TREATING ALUMINUM SURFACES
Sigmund Bereday, R.F.D. 33–U 1, Loiza Station, San Juan, Puerto Rico 00914, and Edwin S. Kolic, Gahanna, Garson A. Lutz, Columbus, and Henry M. Grotta, Delaware, Ohio, and John H. Gibbs, San Juan, Puerto Rico; said Kolic, Lutz, Grotta, and Gibbs assignors to said Bereday
Filed Jan. 14, 1970, Ser. No. 2,883
Int. Cl. C23f 7/00; B32b 15/20
U.S. Cl. 148—6.27 **20 Claims**



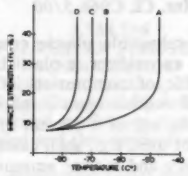
A treated aluminum surface is provided having chemically bonded thereto an organic film comprising at its bonding interface a reaction product of a functional group of an organic compound and an active hydrated amorphous layer of aluminum oxide integral with the aluminum surface, the organic compound having at least 8 carbon atoms and being characterized by said functional group which reacts with an aliphatic alcohol, the active hydrated amorphous layer of aluminum oxide being characterized chemically in that it reacts like an alcohol with the functional group of said organic compound.

3,734,785

ZINC FORGING ALLOY

Thorpe W. Watson, Oakville, Ontario, David V. Parsons, Clarkson, Ontario, and Arthur W. Wild, Wallaceburg, Ontario, Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada

Filed Nov. 30, 1970, Ser. No. 93,725
Claims priority, application Canada, Dec. 31, 1969, 71,193
Int. Cl. C22f 1/16; C22c 17/00
U.S. Cl. 148—11.5 R 17 Claims



A method of providing zinc-base alloy forging stock and a zinc-base alloy forging having superior tensile strength, dimensional stability and resistance to fracture under impact at low temperatures. The alloy comprises from 9 to 22% by weight aluminum, from 0.5 to 1.5% by weight copper, from 0.01 to 0.03% by weight magnesium, and the balance zinc. The said alloy is extruded at a temperature between 275° and 382° C., forged at a temperature between 275° and 382° C., and the forging annealed from one to five hours at a temperature between 200° and 275° C.

ERRATUM

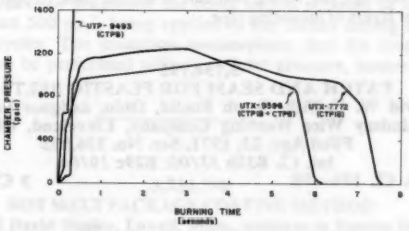
For Class 148—23 see:
Patent No. 3,734,791

3,734,786

SOLID PROPELLANTS FABRICATED FROM A MIXED POLYMER SYSTEM

Ernest J. Walden, Mountain View, and John W. Allan, Menlo Park, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,515
Int. Cl. C06d 5/06
U.S. Cl. 149—19 4 Claims



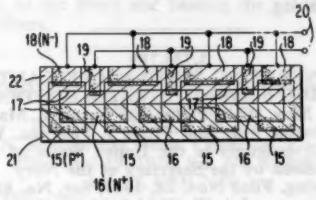
Functionally terminated polyisobutylene and functionally terminated polybutadiene are not completely soluble in each other at room temperature and lower. Nevertheless, it has been discovered that the insoluble mixtures of these materials can be crosslinked to form a homogeneous binder network which is particularly useful in the manufacture of composite solid propellants.

3,734,787

FABRICATION OF DIFFUSED JUNCTION CAPACITOR BY SIMULTANEOUS OUTDIFFUSION

Vir A. Dhaka, and Walter F. Krolikowski, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,672
Int. Cl. H01l 7/64, 19/00, 5/00
U.S. Cl. 148—175 10 Claims



A diffused junction capacitor having two P^+N^+ junctions, one in the semiconductor substrate and one in an epitaxial layer thereon and exhibiting high capacitance per unit area.

A method for forming such a capacitor makes use of the fact that the outdiffusion rate for boron is much faster than the outdiffusion rate for arsenic, whereby, for instance, boron and arsenic diffused into the surface of a semiconductor wafer can, after the growth of an N^- epitaxial layer, be diffused into the N^- epitaxial layer. Since the boron outdiffuses much faster, it will cover a larger area than the arsenic outdiffusion. This will, in turn, result in two P^+-N^+ junctions, one in the substrate and one in the N^- epitaxial layer.

ERRATUM

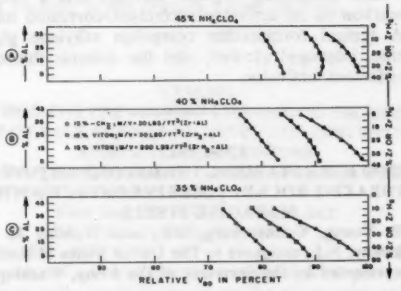
For Class 149—19 see:
Patent No. 3,734,786

3,734,788

HIGH DENSITY SOLID PROPELLANTS AND METHOD OF PREPARATION USING FLUOROPOLYMERS

Martin H. Kaufman, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 17, 1964, Ser. No. 361,612
Int. Cl. C06d 5/06
U.S. Cl. 149—19 2 Claims



1. The process for preparing a high density impulse solid propellant comprising the steps of

(1) dissolving a copolymer of vinylidene fluoride and perfluoropropylene in methylethylketone forming a solution;

(2) adding while stirring weighed quantities of dry ammonium perchlorate and zirconium of about 20μ particle size to said solution until a consistent mixture results;
(3) adding while stirring a volume of hexane about three times the volume of methylethylketone;
(4) permitting a stand without stirring until all the solids settle;
(5) decanting off sufficient liquid to leave about a one-half inch level above the solid residue thereby preventing agglomeration;
(6) washing the residue a second time with hexane of about three times the volume of methylethylketone;
(7) filtering out said residue; and
(8) air drying.

3,734,789

GAS GENERATING SOLID PROPELLANT CONTAINING 5-AMINOTETRAZOLE NITRATE

Bertram K. Moy, White Plains, and Gerald L. MacKenzie, Port Tobacco, Md., and Frank J. Pisacane, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Nov. 28, 1969, Ser. No. 883,327
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **7 Claims**

A gas generating solid composite propellant composition comprising 5-aminotetrazole nitrate as the oxidant component.

3,734,790

GASEOUS ILLUMINANT PYROTECHNIC SYSTEMS

Abraham D. Kirshenbaum, Succasunna, and Francis R. Taylor, Mount Arlington, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,210
Int. Cl. C06b *15/00*
U.S. Cl. 149—22 **7 Claims**

A homogeneous pyrotechnic system which may be used for producing intense illumination such as that generated by flares. The system functions by reacting an all-gaseous fuel, oxidizer and boron additive to produce an intense flame.

3,734,791

SURFACTANT-CONTAINING SOLDERING FLUXES

Richard M. Poliak, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,613
Int. Cl. C23c *1/12*
U.S. Cl. 148—23 **12 Claims**

A water soluble soldering flux substantially free of halide ions comprising organic solvents and a cationic fluorocarbon as an activator/surfactant/corrosion inhibitor. A typical formulation comprises ethylene glycol, glycerine, isopropyl alcohol, and the cationic fluorocarbon surfactant/activator.

3,734,792

METHOD FOR RETARDING THE DECOMPOSITION OF HYDRAZINE ROCKET FUELS IN CONTACT WITH MARAGING STEELS

John P. Young, Gaithersburg, Md., and Wahling H. Ng, Rockaway, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 28, 1971, Ser. No. 148,062
Int. Cl. C06c *1/02*
U.S. Cl. 149—36 **6 Claims**

Liquid hydrazine fuel is stored in a maraging steel container, wherein the surface exposed to the liquid fuel comprises a bimetallic couple of metallic cadmium and bare maraging steel. The rate of decomposition of the hydrazine fuel based on the exposed area of maraging steel is markedly lower than that for maraging steel alone.

3,734,793

NITROCELLULOSE COMBUSTIBLE COMPOSITION HAVING SALT OF POLYETHYLENIMINE AS OXIDIZER

John S. Lory, Commack, N.Y., and Suzanne T. Purrington, Raleigh, N.C., assignors to Lory Industries Inc., Deer Park, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,854
Int. Cl. C06b *5/00*
U.S. Cl. 149—100 **4 Claims**

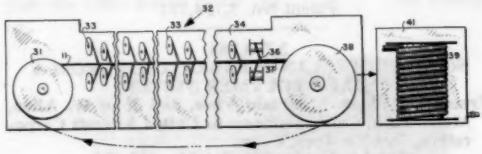
The stabilized combustible plastic compositions comprise nitrocellulose, an oxidizer, a plasticizer and a stabilizer and are capable of combustion in a vacuum and leave a minimum of residue upon combustion. They are compounded with the aid of a solvent and are cast and cured for a variety of uses, e.g., shell cases and increment containers for artillery and mortar ammunition. An illustrative embodiment is a composition consisting essentially of nitrocellulose, perchlorate salt of polyethylenimine as oxidizer, dioctyl adipate and camphor as plasticizer and ethyl centralite and an organotin compound as stabilizer.

3,734,794

HIGH-VOLTAGE CABLE AND METHOD OF MAKING

Lawrence Charles Ebel, Hastings-on-Hudson, N.Y., assignor to Anaconda Wire and Cable Company, New York, N.Y.

Division of Ser. No. 790,000, Jan. 9, 1969, Pat. No. 3,591,704.
This application Nov. 23, 1970, Ser. No. 92,104
Int. Cl. H01b *13/08, 13/26*
U.S. Cl. 156—53 **6 Claims**



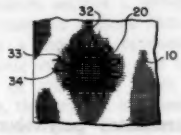
A high-voltage cable, with an insulating wall built up of dielectric tapes, has an electrically floating metal armor tape at mid-potential of the insulation. When the cable is manufactured it can be reeled up after the application of the armor and run through the taping machine a second time to apply the outer layers of insulating tape.

3,734,795

PATCH AND SEAM FOR PLASTIC BELTS

David W. Griffith, South Euclid, Ohio, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio

Filed Apr. 23, 1971, Ser. No. 136,952
Int. Cl. B32b *35/00;* **B29c** *19/06*
U.S. Cl. 156—98 **3 Claims**



Two portions of woven fabric containing polymeric plastic material are joined together by passing a current

of electricity through a current conducting member, which is in contact with the polymeric plastic material, until the member is heated sufficiently to soften the polymeric plastic material and embed the conducting member therein. One article may be a section of woven polymeric plastic material which serves as a patch for a hole in woven polymeric plastic fabric or as a seam for a Fourdrinier paper making machine. The invention includes a method as well as the portions joined by the method.

3,734,796
BONDED POLYESTER FIBROUS MATERIAL AND METHOD
Frank Lamb, Chadderton, Oldham, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application Apr. 15, 1965, Ser. No. 448,247. Divided and this application Jan. 2, 1969, Ser. No. 801,901
Claims priority, application Great Britain, Apr. 22, 1964, 16,606/64
Int. Cl. E06b *9/26*
U.S. Cl. 156—176 **14 Claims**

The disclosure covers bonded polyester fibers and a process for their preparation which consists contacting the outer surface of the fibers with a bonding agent selected from:

(a) a diester of a dicarboxylic acid and a monohydric compound, and
(b) a diester of a monocarboxylic acid and a dihydroxy compound.

The bonded fibers are useful as a packing and insulating material.

3,734,797
CARBON DISK QUALITY PROCESSING
Clifton A. Byers, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 29, 1971, Ser. No. 157,822
Int. Cl. B32b *31/00*
U.S. Cl. 156—253 **5 Claims**

Brake disk blanks are formed by laying up layers of resin impregnated graphite or carbon cloth. Small diameter holes are provided through the layer at spaced intervals over the entire surface of the blank after the blanks are partially cured. The blanks are subsequently fully cured in baking cycles at a temperature sufficient to carbonize and/or graphitize the resin, with a pressure of not less than 500 p.s.i. being applied to the blanks during the bake cycles. The invention contemplates that the invention can be performed with or without pressure, however.

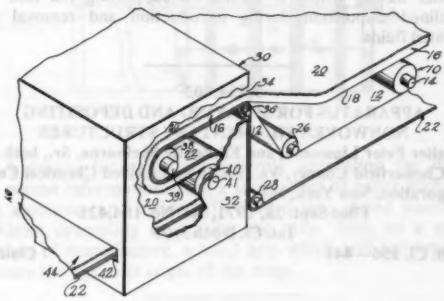
3,734,798
HOT MELT PACKAGE COATING METHOD
Donald David Dooley, Lowell, Mass., assignor to Borden Inc., New York, N.Y.
Division of Ser. No. 837,877, June 30, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,200
Int. Cl. C09j *5/02*
U.S. Cl. 156—308 **7 Claims**

This invention relates to a new method for preparing blister-pack and skin-pack cards and packages which comprises coating the card with, and fastening the blister or skin to the card with, a universal hot-melt adhesive, particularly one as hereinafter described which contributes a high specular gloss to the printed package.

3,734,799
PROCESS FOR SULFOLANE BONDING OF TEXTILE FIBERS
Rupert E. Schaffer, Camberley, John C. Moseley, Woking, and Derrick Sharrod, Farnborough, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed July 7, 1970, Ser. No. 53,021
Claims priority, application Great Britain, July 9, 1969, 34,704/69
Int. Cl. C09j *5/02*
U.S. Cl. 156—308 **12 Claims**

Fibers of textile articles are bonded by applying a blend of a sulfolane and at least one organic diluent, having an evaporation rate of between 0.01 and 3.50 times the evaporation rate of the sulfolane at 100° C. and miscible therewith, to the fibers and heating the article so as to bond the fibers.

3,734,800
METHOD OF LAMINATING CONTINUOUS MATERIAL
William D. Ryan, Calhoun, Ga.
(4285C N. Shallowford Road, Chamblee, Ga. 30341)
Filed June 19, 1970, Ser. No. 47,809
Int. Cl. C09j *7/00*
U.S. Cl. 156—309 **7 Claims**



A method of laminating primary and secondary sheet material particularly laminating tufted carpet goods with a secondary carpet backing to replace the liquid adhesive and other methods presently employed. A sheet of thermoplastic material such as a hot-melt polymer is interposed between the carpet and the backing material continuously as the carpet and backing material are run and then the laminated sheets are placed in an oven to melt the thermoplastic material thereby bonding the secondary carpet backing to the primary carpet backing.

3,734,801
METHOD FOR PREVENTING THE SLIDING OR RIDING UP OF PACKAGED ARTICLES BY COATING WITH ADHESIVE COMPOSITIONS
Hans-Georg Sebel, Dusseldorf, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany
Filed Aug. 25, 1970, Ser. No. 66,862
Int. Cl. C09j *5/00, 7/00*
U.S. Cl. 156—309 **6 Claims**

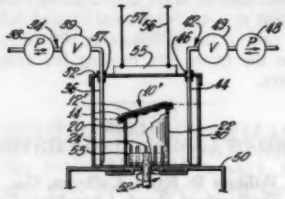
An aqueous colloidal adhesive composition for preventing sliding or riding up of packaged articles having coverings of paper, cardboard or pasteboard comprising an aqueous colloidal solution containing from 0.1 to 2 percent by weight of xanthan gum and the method of preventing sliding ro riding up of packaged articles which comprises interspersing between said package articles, a layer of said aqueous colloidal adhesive composition.

3,734,802

APPARATUS FOR LEACHING GLASS FILMS

Charles I. Cohen, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 726,305, May 3, 1968, Pat. No. 3,615,958.
This application Mar. 19, 1971, Ser. No. 126,246
Int. Cl. C03c *15/00*
U.S. Cl. 156—345 **6 Claims**



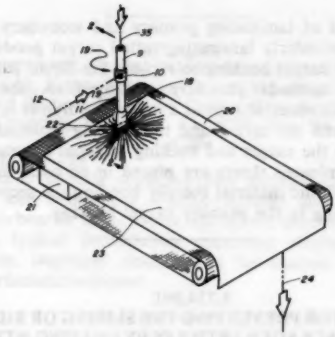
Apparatus and method for leaching films including a container having within it means for supporting the film in inclined disposition during introduction and removal of heated fluids.

3,734,803

APPARATUS FOR SPLAYING AND DEPOSITING NONWOVEN FILAMENTARY STRUCTURES

Walter Peter Lipscomb, and Eli Bently Shelburne, Sr., both of Chesterfield County, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,421
Int. Cl. D04h *3/00*
U.S. Cl. 156—441 **7 Claims**



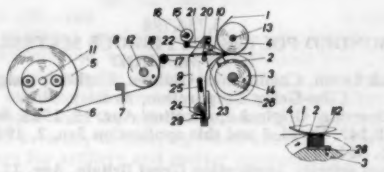
An apparatus of augmenting dispersal and improving deposition of a plurality of continuous filaments onto a continuously moving surface whereby random distribution of the filaments is provided for the production of uniformly distributed nonwoven webs. A splaying device comprising a completely enclosed channel with open ends, the exit end of which is in the form of a slot having an effective shorter dimension less than 25 percent of an effective longer dimension, is positioned near the exit of an aspirator so as to spread the filaments in substantially all directions and to provide greater openness and greater random laydown of filaments.

3,734,804

ROTARY CUTTER AND STRIP FEEDING ARRANGEMENT

Siegfried Knecht and Helmut Demny, Gevelsberg, Germany assignors to Maschinenfabrik Alfred Schmermund, Gevelsberg, Germany

Filed Dec. 17, 1970, Ser. No. 99,029
Claims priority, application Germany, Nov. 11, 1969, P 19 56 531.2
Int. Cl. B32b *31/18*
U.S. Cl. 156—518 **13 Claims**



A rotary cutter and strip feeding arrangement is disclosed.

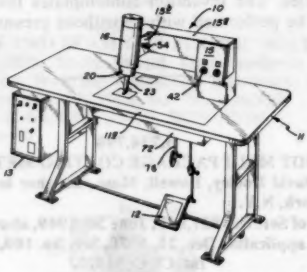
The arrangement is provided with a cutter blade which is filled with rubber projecting beyond the cutting edge of the blade. The cutter blade is mounted on a rotating roller with the cutting edge thereof disposed parallel to the circumferential surface of the roller. The cutter blade cooperates with a counter-roller which feeds a web of cellophane provided with a welded-on tear-open strip to the rotating cutter and which provides a counter surface against which the rotating cutter blade periodically cuts-out a tongue shaped portion from the cellophane web. A length of self-adhesive coloured strip material is periodically contacted by the rotating rubber pad and pressed thereby against the moving web of cellophane so as to be drawn between the two rollers and periodically severed by the cutter blade.

3,734,805

ULTRASONIC SEWING MACHINE

Edward G. Obeda, Brookfield, and Frank Parry, Monroe, both of Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed July 27, 1971, Ser. No. 166,462
Int. Cl. B32b *31/00*
U.S. Cl. 156—580 **4 Claims**



An ultrasonic transducer assembly including a horn, is mounted in a sleeve bearing for axial movement by gravity to bring the horn toward an anvil. A spring actuated lever presses the transducer assembly toward the anvil with the final spring

pressed position determined by an adjustable stop. The lever may be rotated by control means against the pressure of the spring to withdraw the assembly from the stop and to release it thereafter for spring movement back against the stop. The spring pressure is adjustable to determine the pressure required to accept the reaction to the ultrasonic vibrations of the horn, and the stop is adjustable to determine the positioning of the assembly relatively to the anvil.

3,734,806

PREPARATION OF PLASTIC PRODUCTS FROM VINYL CHLORIDE/PROPYLENE COPOLYMERS

Meyer H. Danzig, Bloomfield, and Allen W. Carlson, Wayne, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of application Ser. No. 846,589, July 31, 1969. This application Aug. 30, 1971, Ser. No. 176,282

Int. Cl. B44f *1/00*

U.S. Cl. 161—2 **12 Claims**

Vinyl chloride polymers, effective for forming rigid, dimensionally-stable molded products, can be modified by including therewith certain additives within specified low limits, to yield molding compositions which, when injection or compression molded, produce rigid, shaped articles that are transparent in the thin sections and opaque or translucent in the thick section.

3,734,807

POLYVINYL FLUORIDE SURFACED LAMINATES

Peter Bernard Kelly, Cincinnati, Ohio, and Jay Thomas Oliver, Fort Mitchell, Ky., assignors to Formica Corporation, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 780,183, Nov. 29, 1968. This application Mar. 29, 1971, Ser. No. 129,133

Int. Cl. B44c *1/26, 5/04*; B32b *27/30*

U.S. Cl. 161—5 **6 Claims**

A decorative laminate comprising a heat and pressure consolidated assembly of a rigidity imparting base member, a clear transparent film covering the surface of the decorative side of the laminate in which said clear, transparent, pigment-free film is a homogeneous blend of polyvinyl fluoride containing uniformly dispersed therein from about 0.1% to about 10% by weight of a polymer derived from a monomer of a polymerizable 2-hydroxy-benzophenone containing a polymerizable ethylenically unsaturated group wherein said film is bonded to the remaining layers of the laminate through an alpha cellulose paper layer impregnated with from about 60% to about 70% by weight of a thermosetting melamine formaldehyde resin having a mol ratio between about 1:1.5 and 1:2.5 melamine to formaldehyde respectively.

3,734,808

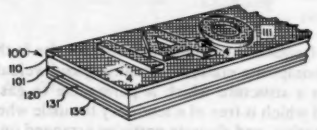
TWO COLORED TAPE

James D. Anderson, Kensington, Calif., assignor to Dymo Industries, Inc., Berkeley, Calif.

Filed Apr. 23, 1965, Ser. No. 450,399

Int. Cl. B44f *1/08*; B32b *7/02, 27/08*

U.S. Cl. 161—6 **8 Claims**



There is disclosed an embossable sheet material including an embossable base sheet of plastic, a transparent top coat of plastic firmly bonded to the front surface of the base sheet and a transparent background coat of plastic firmly bonded to the rear surface of the base sheet, the transparent top coat having a first coloring agent uniformly distributed therethrough and the background coat having a second coloring agent uniformly distributed therethrough, whereby the sheet material is embossable to provide opaque embossments having the color of the first coloring agent on a field having a color that is a combination of the first and second coloring agents, a layer of pressure sensitive adhesive on the rear surface of the background coat, and a backing sheet covering the exposed surface of the adhesive.

3,734,809

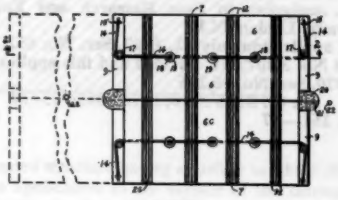
MEANS FOR MORE CONVENIENTLY PERUSE FROM A LARGE SHEET OF PAPER

Robert Ellis, 350 Lomas Santa Fe Drive, Solana Beach, Calif. 92075

Filed Aug. 26, 1971, Ser. No. 175,077

Int. Cl. B32b *3/10*

U.S. Cl. 161—17 **1 Claim**



A means for more conveniently permitting the user to peruse information from a large sheet of paper such as an auto-map and incidentally fold it into closed position without crumpling or tearing the map. Also, as a new article of manufacture, a hand grip which will removably secure the opposite edges of the map.

3,734,810

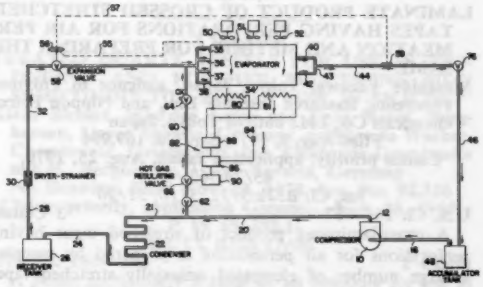
HEATING AND COOLING SYSTEM

Noel Davis, Geauga, Ohio, assignor to Integrated Development & Mfg. Co., Chagrin Falls, Ohio

Continuation-in-part of Ser. No. 821,889, May 5, 1969, abandoned. This application June 16, 1971, Ser. No. 153,575

Int. Cl. F25b *29/00*

U.S. Cl. 165—29 **12 Claims**



A direct expansion type heating and cooling system is provided with means for supplying a heat exchange coil with proportioned mixtures of liquid refrigerant and hot refrigerant gas. Constant temperature is maintained in the conditioned area at any point from full cooling to full heating, by propor-

tioning refrigerant condensate and hot, uncondensed refrigerant gas to the heat exchange coils. Proportioning is attained by modifying the refrigerant condensate expansion valve to move in the direction of closing in response to an increase in uncondensed refrigerant gas flow into the heat exchange coils. The amount of uncondensed refrigerant gas flow into the heat exchange coils is controlled in response to the temperature of the conditioned area. The feed to the heat exchange coils may vary between 100 percent condensate and no uncondensed refrigerant gas, to 100 percent uncondensed refrigerant gas and no condensate. Normally, a mixture of condensate and refrigerant gas is introduced into the evaporator coil.

Electric resistance heaters may be used in conjunction with the heat exchange coils to supplement heating and to "fine tune" temperature controls.

3,734,811

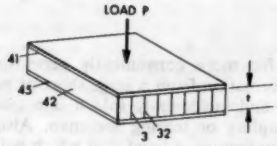
LAMINATED CONSTRUCTION OF CELLULAR PLASTIC MATERIAL

Augustus B. Small, Brussels, Belgium, Paul T. Gorman, Arenzano, Italy, and Frederick J. McGarry, Weston, Mass., assignors to Esso Research and Engineering Company, Linden, N.J.

Original application July 12, 1967, Ser. No. 652,748, now Patent No. 3,607,531. Divided and this application Oct. 29, 1970, Ser. No. 85,236

Int. Cl. B32b *3/10, 5/18;* **B65d** *25/14*

U.S. Cl. 161—37 **4 Claims**



According to the teachings of the instant invention, a high-strength cellular plastic insulation system comprised of alternating layers of cellular plastic and thin columns of solid plastic is formed by heat sealing blocks of the cellular plastic together. The resulting product, while retaining its high insulation efficiency, has greatly improved compressive strength and increased fatigue resistance.

3,734,812

LAMINATE PRODUCT OF CROSSED STRETCHED TAPES HAVING PERFORATIONS FOR AIR PERMEATION AND METHOD FOR PREPARING THE SAME

Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute Ltd., and Nippon Petrochemicals Co., Ltd., both of Tokyo, Japan

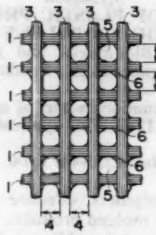
Filed Aug. 9, 1971, Ser. No. 169,990

Claims priority, application Japan, Aug. 25, 1970, 45/74,762

Int. Cl. B32b *5/12, 3/10, 31/26*

U.S. Cl. 161—57 **3 Claims**

A cross-laminated product of stretched tapes having perforations for air permeation is prepared by warping a large number of elongated uniaxially stretched tapes of narrow width prepared from a fiber forming polymer at predetermined distances from one to another, laminating the warped tapes as a warp tape layer and weft tape layer, so that the warp tapes and weft tapes may be crossed perpendicularly or slantedly, or laminating two tape layers together, each of which has slantedly arranged tapes at predetermined distances from one to the other in the longitudinal direction of the tape layer, so that the tapes of each tape layer may be crossed perpendicularly or slantedly, thermally bonding the tape layers to each other under a pressure by providing at least one film layer of a polymer having a lower melting or softening temperature than that of the tapes between both layers as an adhesive binder, subjecting the resulting laminate to sufficient heat, thereby to melt the film at portions surrounded by crossed



tapes, gather the molten film towards tape sides and form perforations for air permeation at portions surrounded by crossed tapes. And a composite laminate is prepared by bonding one layer composed of laminated product abovementioned, onto at least one surface of a layer composed of fibrous material. Cleavage and fluffing of the stretched tapes are suppressed by the gathered and solidified film of the polymer, and adhesion at the crossings of the warp and weft tapes is much intensified.

3,734,813

HIGH FREQUENCY-WELDABLE MATERIAL

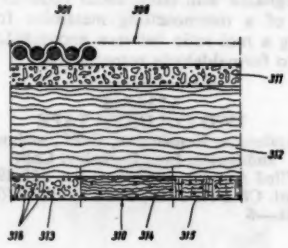
Gerhard Pohl, 63 Proffessorenweg 33, Gieben, Germany

Filed Jan. 19, 1970, Ser. No. 3,950

Claims priority, application Germany, Jan. 25, 1969, P 19 03 667.0; Mar. 15, 1969, P 19 13 209.3; July 16, 1969, P 19 36 199.0; June 10, 1969, P 19 29 352.8

Int. Cl. B32b *7/14, 5/16*

U.S. Cl. 161—148 **24 Claims**

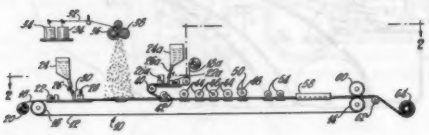


A high frequency-weldable material for use in the manufacture of a composite material containing said weldable material comprises a structure which is permeable to gas, vapor and liquid and which is free of a tendency to rustle when subjected to deformation, and discrete particles arranged on at least one boundary surface of said structure and consisting of a thermoplastic synthetic resin, which is adapted to melt and to produce a high frequency-welded joint under the action of a high-frequency field and to resist the action of detergents and dry-cleaning agents.

3,734,814
SHEET MOLDING COMPOUND AND MATERIALS THEREOF

Carlton J. Davis, Sr., 43 Garrick St., Newark; Richard P. Wood, 529 Burg St., Granville, and Everett R. Miller, Joy Lane, Route 2, Granville, all of Ohio

Division of Ser. No. 741,677, July 1, 1968, Pat. No. 3,615,979. This application Oct. 4, 1971, Ser. No. 186,369
Int. Cl. B32b 3/10
U.S. Cl. 161—112 6 Claims

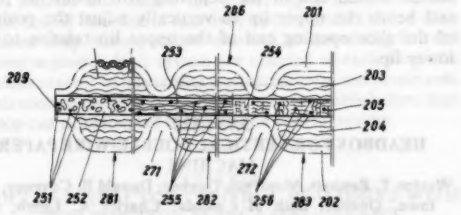


The specification describes a process for making a sheet molding compound wherein a layer of resin-filler paste that includes a thickening agent and a hardening catalyst is put down upon a first layer of sheet material; a layer of glass fibers that are sized with a material which induces wet out is placed thereon; following which another layer of the resin-filler paste containing the catalyst is placed thereon and covered by a second layer of sheet material. The sandwich thus formed is fed into the bite of rollers which squeeze out air and compress the resin-filler paste around the sized fibers, following which the composite is placed under further compaction that includes a perforating means which forces needle-like members through at least one layer of the sheet material, through the resin-filled paste, and into the layer of fibers for the removal of remaining entrapped air. The glass fibers which are used are sized with a material that includes both a hardening resin, and a nonhardening resin. Specifically, the fibers are coated with an unsaturated polyester resin and a saturated polyester resin which are preferably deposited on the glass fibers as emulsified particles.

3,734,815
LAMINATED SAFETY-GLASS AND CABIN FURNISHED THEREWITH

Hendrik Jan Schorel, Beverwijk, Netherlands, assignor to Koninklijke Nederlandsch Hoogovens en Staalfabrieken N.V., Ijmuiden, Netherlands

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,766
Claims priority, application Netherlands, Apr. 1, 1970, 7004650
Int. Cl. B32b 17/10
U.S. Cl. 161—165 5 Claims

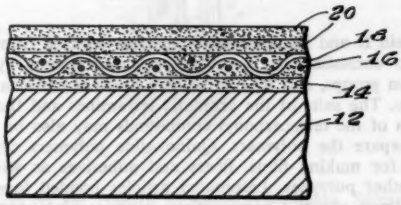


Laminated safety-glass or bullet-proof glass has at least three layers of glass with plastic layers therebetween; one outer glass layer is no thicker than the other two, a first plastic layer adjacent the other outer layer has not more than 13% of the thickness of said one outer glass layer, and the plastic layer adjacent said one outer glass layer is 5 to 11 times as thick as said first plastic layer. Plate glass layers and polyvinylacetal, preferably polyvinylbutyral, plastic layers, are preferred; and relatively thick and relatively thin structures, and cabins having transparent walls thereof, are disclosed.

3,734,816
LAMINATED STRUCTURE HAVING A RENEWABLE TACKY SURFACE

Joyce A. Swasey, Rutland Street, Carlisle, Mass.

Continuation of Ser. No. 741,691, July 1, 1968, abandoned. This application Feb. 10, 1971, Ser. No. 114,359
Int. Cl. C09j 7/02
U.S. Cl. 161—167 8 Claims



A laminated structure having a surface to which objects adhere upon application to the surface of the lamination and which objects may be removed from the surface and readhered thereto repeatedly over a long period of time. The lamination comprises an adhesively coated supporting member, a material impregnated with a pressure sensitive plastic adhesive, the material having open interstices in which the plastic adhesive is retained overlying and secured to the adhesively coated supporting member and a plastic adhesive film on the exposed surface of the underlying impregnated material. The film is believed to inhibit curing of the impregnant, and the plastic impregnant maintained in a substantially uncured flowable condition. Upon the application of an object to the surface film it is believed that the pressure exerted causes the film to be interrupted and an amount of the uncured plastic impregnant to flow to the surface of the film, thereby providing a surface to which the object may be removably adhered. The surface of the lamination is capable of being washed with soap and water to remove accumulations of dust, dirt or other material which pressure sensitive adhesive coatings normally attract. Such washings maintain both the appearance and the functional adhesiveness of the laminate over a very long period of time.

3,734,817
TREATED QUARTZ VESSELS FOR USE IN PRODUCING AND FURTHER PROCESSING III–V SEMICONDUCTOR BODIES LOW IN SILICON

Klaus Bienert, Winfried Lang, and Egon Nordt, Burghausen, Upper Bavaria, Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe m.b.H., Burghausen, Upper Bavaria, Germany

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,318
Claims priority, application Germany, Nov. 26, 1969, P 19 59 392.1
Int. Cl. B32b 17/06
U.S. Cl. 161—192 1 Claim

A vessel particularly a phial or an ampoule for use in producing, and further processing, III–V semiconductor bodies low in silicon, which vessel is composed of quartz having its inside wall coated with a substance which is inert at the working temperature. Semiconductor bodies produced or further processed in such a vessel contain much less silicon than similar bodies produced or processed in conventional quartz vessels.

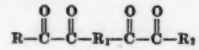
3,734,818

LAMINATED PRODUCTS BONDED TOGETHER WITH A QUINOXALINE POLYMER

John K. Stille, Iowa City, Iowa (% Department of Chemistry, University of Iowa, Iowa City, Iowa)

No Drawing. Application Apr. 24, 1969, Ser. No. 819,532, which is a continuation-in-part of application Ser. No. 344,232, Feb. 12, 1964, both now abandoned. Divided and this application Mar. 2, 1970, Ser. No. 20,263
Int. Cl. C08g 9/06; B32b 15/08
U.S. Cl. 161—213 3 Claims

Polymers containing recurring quinoxaline groups which are the reaction products of aromatic tetramines containing two sets of ortho-amine functions attached to the aromatic nucleus and tetracarbonyl compounds having the formula:



wherein R and R_2 represent a member selected from the group consisting of hydrogen and monovalent hydrocarbon groups, and R_1 represents a divalent hydrocarbon group. The salts of the aromatic tetramines and the hydrates of the tetracarbonyl compounds may also be used to prepare the polymers. Quinoxaline polymers can be used for making films, fibers and adhesives as well as for other purposes. Laminated articles bonded together with these adhesive compositions, such as high temperature metal laminates are also disclosed.

3,734,819

ETHYLENE-VINYL ACETATE EMULSION ADHESIVE

Gaylen M. Knutson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 50,880, June 29, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,256
Int. Cl. C08f 37/00; C09j 3/14
U.S. Cl. 161—254 13 Claims

A process for the production of an aqueous emulsion of an ethylene-vinyl acetate polymer is disclosed wherein the polymerization is performed in the presence of a heel, a small amount of a vinyl or C_3 to C_{12} vinylalkylene, vinylcycloalkylene or vinylarylene sulfonic acid or the sodium, potassium, lithium or ammonium salt thereof and a minor amount of a polyvinyl alcohol protective colloid. The heel is an aqueous emulsion of an ethylene vinyl-acetate polymer which contains from 1 to 20 weight percent ethylene and a small amount of polyvinyl alcohol colloid. The polymerization is performed under an ethylene pressure of 100 to 1,000 psig., sufficient to incorporate from 1 to 20 weight percent ethylene into the final polymer product and carried out until the total free monomer content of the emulsion is maintained below about 1 weight percent. Conventional free radical initiation of the polymerization reaction is used. The resultant emulsion can be used as an adhesive since films formed therefrom exhibit a high degree of adhesiveness to vinyl surfaces.

3,734,820

CATIONIC DEXTRAN GRAFT COPOLYMERS AS DRY STRENGTH ADDITIVES FOR PAPER

Merwin Frederick Hoover, Pittsburgh, and Gloria Di Marco Sinkovitz, Bridgeville, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,898
Int. Cl. D21h 3/20
U.S. Cl. 162—168 10 Claims

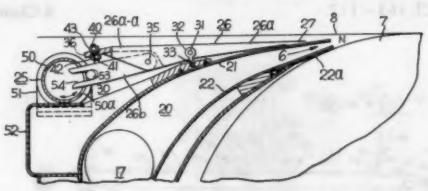
Paper products exhibiting markedly improved dry strength properties are produced by adding to the aqueous cellulose dispersion, prior to sheet formation, novel, cationic graft copolymers of certain polymerizable acrylic and/or diallylic quaternary ammonium monomers and acrylamide grafted onto a dextran substrate.

3,734,821

HEADBOX FOR CYLINDER ROLL PAPERMAKING MACHINE

Donald R. Curtis, Appleton, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 14, 1970, Ser. No. 97,607
Int. Cl. D21f 1/04
U.S. Cl. 162—317 5 Claims



A headbox is disclosed having a vertical flow chamber connected to a curved and tapered nozzle which defines a slice opening for jetting paper stock from the flow chamber along a path having both horizontal and vertical components and into a nip above a cylindrical forming roll and beneath a felt tangentially engaging an upper portion of the forming roll. The headbox nozzle has an upper and lower lip projecting into the nip. An adjusting mechanism is provided for the upper lip which includes a plurality of adjusting arms each connected on one end to the top of the upper lip proximate to the slice opening. The arm projects from the slice opening toward the flow chamber end of the nozzle and diverges from the upper lip to define a generally wedge-shaped space between the arm and the upper lip. A horizontal pivot is connected to the arm intermediate the ends thereof. A journal is connected to the pivot and has a link portion which spans the space between the adjusting arm and the upper lip and is connected to the upper lip. The adjusting arm is made up of a first and a second section pivotally connected by a horizontal pin at a location between the journal and the flow chamber end of the adjusting arm. The section that comprises the slice opening end of the arm has a portion projecting around the pin with a terminal end of this portion vertically spaced above the other of the sections. A vertically adjustable link connects this terminal end portion of the one section, to said other of the sections, to provide for holding the two sections of each arm in variable preselected angular positions relative to each other for warping the upper slice lip to provide a desired profile to the upper lip. A horizontal rotatable drive shaft is mounted on the headbox adjacent the flow chamber end of the adjusting arm and this shaft has a horizontal pin attached to the periphery of the shaft which projects into a slot defined in the adjacent end of the arm. Rotation of the drive shaft raises and lowers the connected end of the adjusting arm about the pivot and bends the upper lip to vertically adjust the position of the slice opening end of the upper lip relative to the lower lip.

3,734,822

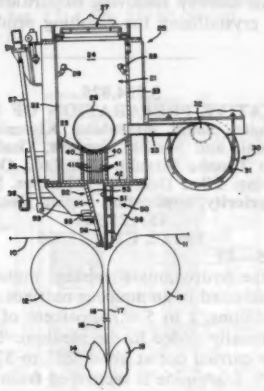
HEADBOX FOR VERTICAL DOUBLE-WIRE PAPER MACHINE

Weston T. Bennett, Montreal, Quebec; Donald B. Coveney, Ottawa, Quebec, both of Canada; Charles A. Lamb, and Jonathan Leslie Hanson, both of Watertown, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Filed Oct. 16, 1970, Ser. No. 81,447
Int. Cl. D21f 1/06
U.S. Cl. 162—343 1 Claim

The headbox for a vertically oriented double-wire papermaking machine is formed with one fixed slice lip parallel to

the forming zone defined by the wires and another, adjustable slice lip in converging relationship to the first. The second slice lip is formed with a fixed upper section and a pivotally mounted lower section, and the first slice lip includes a



chamber on the side opposite the second slice lip which has inlet and outlet openings which allow for heated liquid recirculation therethrough so that the first slice lip may be preheated and the opening between the slice lips adjusted before stock is passed therebetween.

3,734,823

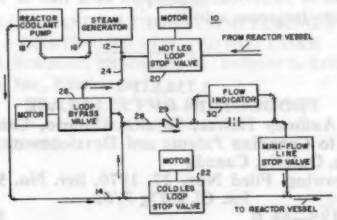
NUCLEAR REACTOR LOOP REACTIVATION SYSTEM

William W. Brown, Monroeville; Robert A. Loose, Murrysville, and John A. Vogel, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1969, Ser. No. 877,644

Int. Cl. G21c *7/32, 17/00*

U.S. Cl. 176—26 **2 Claims**



A method and means for protecting a nuclear reactor against rapid insertion of reactivity upon the reactivation of an isolated hoop. A temperature interlock, a flow mixing line and a time sequence logic system are coupled to each loop of a nuclear reactor to insure that the temperature and boron concentration of the fluid in each loop are acceptable before such a loop can be recoupled to the reactor coolant system.

3,734,824

NUCLEAR REACTOR CONTROL ROD DRIVE WITH ROD POSITION INDICATING MEANS

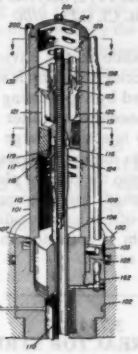
Charles C. Ripley, San Jose, Calif., assignor to General Electric Company

Filed Apr. 14, 1969, Ser. No. 815,608

Int. Cl. G21c *7/08*

U.S. Cl. 176—36 R **22 Claims**

A nuclear reactor control element drive system is disclosed which is capable of both gradual movement during normal reactor operation and high speed insertion in the event of a reactor emergency. This assembly is extremely compact both in length and in permitting close center-to-center mounting. An accurate system for indicating the position of the control elements is included. Safety and reliability are enhanced by a trapped part design which eliminates the need for numerous fasteners and permits rapid, convenient maintenance of the components in the mechanism.



3,734,825

DEVICE FOR CONTROLLING AND SHUTTING-DOWN PRESSURIZED-WATER NUCLEAR REACTOR

Hans-Peter Schabert, Erlangen, and Hartmut Seibelberger, Braeunighof, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 7, 1971, Ser. No. 178,270

Claims priority, application Germany, Sept. 8, 1970, P 20 44 303.2

Int. Cl. G21c *7/12*

U.S. Cl. 176—36 R **13 Claims**

A dual control member serves to control and shutdown a pressurized-water nuclear reactor and has a control element that includes a plurality of finger control rods secured to a central drive rod through a spider-shaped holder and a shutdown member held by a drive tube surrounding the drive rod and having a separate coaxial spider-shaped holder for a plurality of finger shutdown rods.

3,734,826

METHOD OF SUPPRESSING THE FORMATION OF METHYL IODIDE IN A WATER-COOLED NUCLEAR REACTOR

William L. Slagle, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 20, 1972, Ser. No. 273,668
Int. Cl. G21c *9/00*
U.S. Cl. 176—37 6 Claims

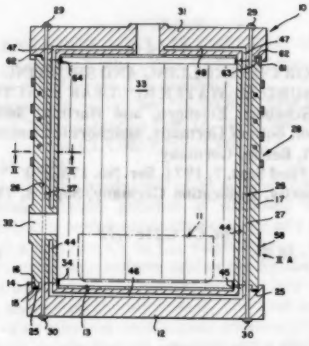
Release of methyl iodide to the environment following a major loss-of-coolant accident in which significant core meltdown occurs is prevented by suppressing its formation rather than by reducing its concentration after it has been formed. This is accomplished by injecting a large excess of a material which is more reactive to methyl radicals than is iodine, such as chlorine or fluorine, into the reactor plenum and, if desired, into the reactor containment vessel immediately upon occurrence of a major loss-of-coolant accident. Preferably, the chlorine injection system is activated the same time as the emergency core cooling system.

3,734,827

NUCLEAR-REACTOR STRUCTURE

Franz Schilling, Kempen, Rhineland, Germany, assignor to Siempelkamp Giesserei KG, Krefeld, Germany

Filed Jan. 5, 1970, Ser. No. 780
Int. Cl. G21c *13/08*
U.S. Cl. 176—87 12 Claims



A nuclear-reactor structure in which the reactor core is housed in a metallic enclosure serving in part as a pressure vessel and at least in part as a radioactive shield. The walls of the structure are made up of prestressed cast-iron bodies which may have interfitting or interlocking formations with any gaps filled by pressure-retaining compounds. Stressing may be effected by rods or cables running through the cast-iron elements or by externally positioned cables, wires, bands or rings.

3,734,828

PROCESS FOR THE SEPARATION AND PURIFICATION OF RIBOFLAVINYL GLYCOSIDES

Toshio Miyake, Okayama, and Yukio Suzuki, Kurashiki, Japan, assignors to Hayashibara Company, Okayama, Japan

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,035
Claims priority, application Japan, Mar. 31, 1970, 45/27,328
Int. Cl. C07d *57/32*
U.S. Cl. 195—28 R 4 Claims

Process for recovering and purifying riboflavinyl glycosides which are produced by subjecting transglucosidase to a mixture solution of carbohydrates and riboflavin, which comprises crystallizing riboflavin by means of reduction concentration thereby removing the crystallized riboflavin, adding hydrosulfite to the crystallized riboflavin to give reduced riboflavinyl glucosides in crystal forms, separating the product from the sugars, passing the resulting product through acidic- and moderately basic ion exchange resins thereby removing impurities, then concentrating and crystallizing the resulting product.

3,734,829

FERMENTATIVE PREPARATION OF L-ARGININE

Ichiro Chibata, Sakai, Masahiko Kisumi, Kobe, Jyoji Kato, Sakai, and Masaki Sugiura, Osaka, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,576
Claims priority, application Japan, Dec. 25, 1970, 45/125,917
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 7 Claims

An arginine hydroxamate-resistant mutant of *Bacillus subtilis* is cultivated in an aqueous nutrient medium under aerobic conditions. 1 to 5 w./v. percent of glutamic acid may be optionally added to the medium. The cultivation is preferably carried out at about 25° to 37° C. and at a pH of 6 to 9. L-arginine is recovered from the fermentation broth.

3,734,830

CONTINUOUS PROCESS FOR PREPARING DELTA-DEHYDROGENASE

Dewey Y. Ryu, East Brunswick; Bong Kuk Lee, Old Bridge, and Richard W. Thoma, Somerville, all of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Feb. 4, 1971, Ser. No. 112,827
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 7 Claims

A continuous process is provided for preparing inducible enzymes wherein cells of a microorganism are grown in a first stage under substantially optimal conditions for growth and enzyme is produced in a second stage in the presence of an inducer under conditions substantially optimal for enzyme production. This process is especially applicable to the production of Arthrobacter simplex cells rich in 3-ketosteroid-Δ′-dehydrogenase activity.

3,734,831

PRODUCTION OF CELLULASE

Michael Anthony Hulme, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,506
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 8 Claims

In a process for producing cellulase in a submerged culture containing a cellulase synthesizing fungus and nutrients including an assimilable carbon source material, the improvement comprising regulating the amount of assimilable carbon source material in said culture medium so as to maintain its concentration at a stage of imminent exhaustion so as to maximize cellulase production.

3,734,832

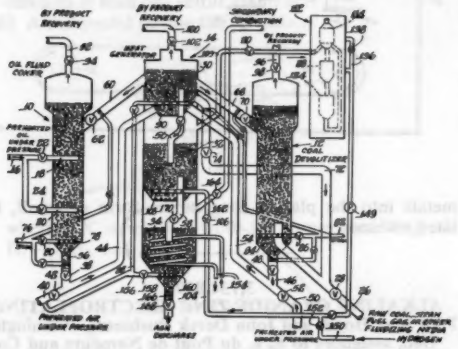
FERMENTATION PROCESS FOR PRODUCING PHYSOSTIGMINE

Donald R. Daoust, South Plainfield, N.J., assignor to Merck & Co., Rahway, N.J.

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,649
Int. Cl. C12b *1/00*
U.S. Cl. 195—80 R 6 Claims

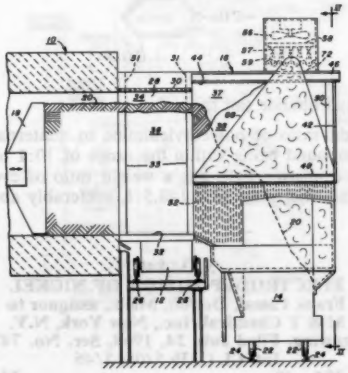
A fermentation process for preparing the known compound physostigmine.

3,734,833
LOW SULPHUR FUEL SYSTEM
Alamjit D. Singh, 4015 N. Whipple St., Chicago, Ill. 60618
Filed Dec. 10, 1969, Ser. No. 883,982
The portion of the term of the patent subsequent to Apr. 8, 1986, has been disclaimed
Int. Cl. C10b *55/10, 57/00*
U.S. Cl. 201—17 **14 Claims**



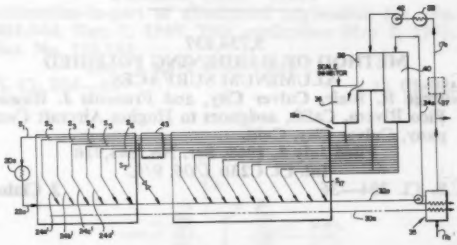
In accordance with the method and apparatus herein set forth, an oil fluid coker and a coal devolatilizer are interconnected with a heat generator, whereby to effect the formation of a carbonaceous product or char, which is a combination of oil fluid coke and devolatilized coal. By-products from the oil fluid coker, and from the coal devolatilizer, and from the heat generator may be separately withdrawn. The heat generator is sectionalized to provide for a maximum removal of sulphur from the carbonaceous product, or fuel, and to effect a partial gasification thereof, and to provide for the burning or combustion of the fuel directly within the heat generator, for maximum combustion efficiency.

3,734,834
APPARATUS AND METHOD FOR APPLYING A FOAM COATING TO EJECTED HOT COKE
Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont Associates, Inc., Pittsburgh, Pa.
Filed July 19, 1971, Ser. No. 163,947
Int. Cl. C10b *39/00*
U.S. Cl. 201—39 **7 Claims**



Apparatus and method for applying an adherent foamy layer of bubbles on hot coke as it is ejected from an oven of a battery of by-product coke ovens, wherein a box-like housing extends outwardly from a coke oven guide carriage and over a coke transfer car which car is on a level below the coke oven guide carriage; the housing having an open end facing and alignable with the coke oven and having an open bottom side; and means associated with the housing for generating and applying a foamy coating onto the mass of coke as it passes through the housing; and the foam generating means being mounted on the housing, whereby the foamy coating excludes air from the coke and encompasses any fumes and dust generated by the coke during its ejection and fall into the transfer car.

3,734,835
MULTI-STAGE FLASH DISTILLATION PROCESS
Attilio R. Spicacci, 22 Allen Street, New Britain, Conn.
Filed July 29, 1971, Ser. No. 167,366
Int. Cl. B01d *3/00, 3/10, 3/02, 1/28*
U.S. Cl. 203—7 **11 Claims**

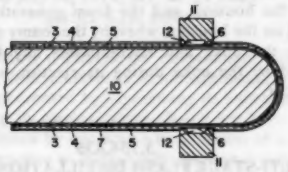


In a multi-stage flash distillation process, feed liquid to be distilled is progressively preheated by passage along a primary flow path in heat exchange relation with vapor zones of a series of successively staged flash evaporation chambers having flash liquid zones arranged in fluid communication. Flash liquid evaporated from the various flash liquid zones is replenished by feed liquid diverted from the primary flow path to and along secondary or by-pass flow paths leading directly to associated liquid zones. The liquid diverted to each secondary flow path has a temperature substantially equal to the temperature of the flash liquid in the zone to which it is diverted. When the liquid to be distilled contains scale forming materials which tend to precipitate at high temperatures, the liquid is preferably divided into a plurality of parts and at least one of the parts is treated with a suitable scale inhibitor. Feed liquid is tapped from the various parts to provide a plurality of streams of feed liquid which collectively comprise the primary flow path. At least some of the streams contain differing concentrations of scale inhibitor. Each stream is diverted from the primary flow path as aforedescribed when the preheated liquid in the stream attains a temperature slightly below the temperature at which scale deposition tends to occur.

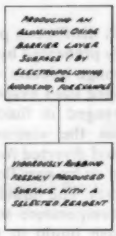
3,734,836
METHOD OF MAKING AN ELECTROCHEMICAL TIMING MEMBER
Charles William Erwood, 28 Canonsfield Road, Welwyn, England
Original application Jan. 31, 1958, Ser. No. 712,588, now Patent No. 3,475,571, dated Oct. 28, 1969. Divided and this application Sept. 21, 1960, Ser. No. 57,585
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **1 Claim**

The method of forming an electrochemical tubular member for use in an electrochemical timing device comprises electrodepositing successive layers of copper, gold,

and silver upon a cylindrical former member; placing a non-conductive ring over a circumferential section of the deposited material; successively electrodepositing silver and gold; removing the non-conductive ring and electrodepositing lead. When used in an electrochemical timing device wherein the metal on the tubular member is dissolved, rupture occurs at the circumferential section to initiate a desired action.



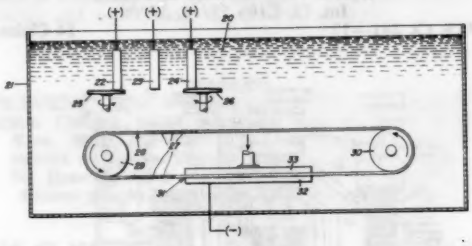
3,734,837
METHOD OF HARDENING POLISHED ALUMINUM SURFACES
George R. Blair, Culver City, and Francois J. Ricaud, Pico Rivera, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 8, 1969, Ser. No. 843,910
Int. Cl. C23b *3/06, 9/02*
U.S. Cl. 204—36 2 Claims


PRODUCING AN ALUMINUM OXIDE BARRIER LAYER SURFACE BY ELECTROPOLISHING OR ANODIZING, FOLLOWED
VIGOROUSLY RUBBING FRESHLY PRODUCED SURFACE WITH A SELECTED REAGENT

A method of providing a scratch resistant aluminum surface wherein a freshly processed aluminum oxide barrier layer surface is vigorously rubbed with soft absorbent material saturated with a water soluble hydroxylated compound such as, for example, methanol, water, hydroxyacetic acid, monoethanolamine, ethylene glycol and monoethyl ether of ethylene glycol. The latter step may also directly follow an electropolishing and/or an anodizing treatment.

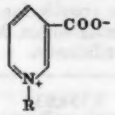
3,734,838
MULTIPLE METAL ELECTRODEPOSITION
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed May 24, 1972, Ser. No. 256,395
Int. Cl. C23b *5/32*
U.S. Cl. 204—43 R 5 Claims

A method for deposition of two or more metals simultaneously at high deposition rates by continuously and repetitively contacting the surface of the electrodeposit during its formation with a plurality of small, dynamically hard particles held in spaced, fixed relationship to one another in or on a supporting matrix while simultaneously introducing the electrolyte containing the ions of such metals into the plating zone in the form of small, isolated volumes.

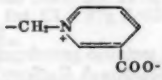


3,734,839
ALKALINE CYANIDE ZINC ELECTROPLATING
Paul Jean Hoyer and John Derek Rushmere, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Sept. 30, 1971, Ser. No. 185,348
Int. Cl. C23b *5/10*
U.S. Cl. 204—55 Y 18 Claims

Aqueous, alkaline cyanide zinc electroplating baths and processes are provided which electrodeposit bright zinc at low cyanide concentrations by using as an addition agent a combination of polyethylenimine having a molecular weight between about 600 and 60,000 and a quaternary pyridine compound of the formula:



wherein R is alkyl, alkenyl or alkynyl of 1 to 4 carbon atoms, benzyl and substituted benzyl wherein the substituent is at least one of alkyl of 1 to 4 carbon atoms, halogen, cyanide, alkoxy of 1 to 4 carbon atoms, phenyl and



or a hydrohalide salt thereof,

the weight ratio of polyethylenimine to quaternary pyridine compound being within the range of 10:1 to 1:100. The electroplating bath has a weight ratio of cyanide to zinc within the range of 0.1–3.5:1, preferably about 1:1.

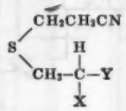
3,734,840
ELECTRODEPOSITION OF NICKEL
Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Filed July 24, 1968, Ser. No. 747,098
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 21 Claims

This invention relates to novel compositions and to an improved process for electroplating bright nickel which

comprises electrodepositing nickel from an aqueous nickel electroplating bath containing (a) as a first primary brightener an effective amount of a water-soluble acetylenic compound, (b) a secondary brightener, and (c) as a second cooperating primary brightener an effective amount of:

(i) A heterocyclic compound having at least two nitrogen atoms in an otherwise carbocyclic structure wherein at least one nitrogen atom bears at least one cyanoethyl group and wherein said compound contains at least one sulfur atom; or

(ii) A compound having the formula



wherein X is selected from the group consisting of H, —NH_2, and

and Y is CN or

and salts thereof.

3,734,841

METHOD OF DETERMINING THE ACTUAL RESISTANCE VALUE OF AN ELECTROLYTIC CELL

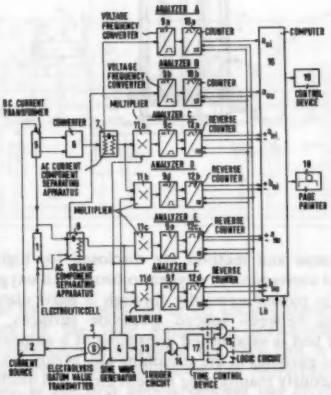
Johann Thomas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 12, 1971, Ser. No. 188,103

Claims priority, application Germany, Oct. 13, 1970, P 20 50 126.2

Int. Cl. B01k *3/00;* **C22d** *3/12*

U.S. Cl. 204—67 **9 Claims**



A method of determining the actual resistance value of an electrolytic cell for regulation to a constant cell resistance by measuring the cell voltage and the cell current comprises the steps of determining by Fourier analysis the median value of the Fourier coefficients of a harmonic wave in a specified period of time from the alternating components of the cell current and the cell voltage and computing the active and reactive components of the AC resistance from the Fourier coefficients. The method is undertaken by apparatus comprising Fourier analyzer means. The Fourier analyzer means comprises a plurality of multipliers equal in number to the number of Fourier coefficients to be determined. Each of a plurality of integrators is connected to the output of a corresponding one of the multipliers. An adjustable frequency sine wave generator has outputs connected to the inputs of the multipliers. Computer means has inputs connected to the outputs of the integrators for computing the effective resistance and the reactance from the Fourier coefficients.

3,734,842

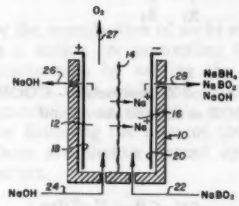
ELECTROLYTIC PROCESS FOR THE PRODUCTION OF ALKALI METAL BOROHYDRIDES

Hal B. H. Cooper, 4234 Chevy Chase Drive, Pasadena, Calif. 91103

Continuation-in-part of abandoned application Ser. No. 881,664, Dec. 3, 1969. This application May 5, 1971, Ser. No. 140,584

Int. Cl. B01k *1/00;* **C01b** *6/14*

U.S. Cl. 204—86 **21 Claims**



A process for producing an alkali-metal borohydride solution utilizing an electrolytic cell having a cationic-selective membrane separating the anode and cathode compartments with reduction of borate ions to borohydride ions occurring in the cathode compartment to produce the alkali-metal borohydride solution from which the borohydride material may be separated.

3,734,843

IRRADIATION OF ETHYLENE/VINYL ACETATE COPOLYMERS

Robert K. Tubbs, Lewiston, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 796,985, Feb. 6, 1969. This application Nov. 17, 1970, Ser. No. 90,456

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.14 **21 Claims**

The initial melt index of ethylene/vinyl acetate copolymers can be substantially, i.e., more than 50 percent, lowered by treating the copolymers with high energy ionizing radiation of high dose rates, e.g., high energy electrons. In the present process the amount of radiation employed is less than that which transforms the copolymers into elastomers as indicated by the presence of copolymer gel. Gel free irradiated ethylene/vinyl acetate copolymers containing 15–35 weight percent vinyl acetate are exceptionally useful as wax additives.

3,734,844

NOVEL COMPOUNDS AND PROCESS

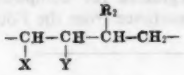
Adnan A. R. Sayigh; Fred A. Stuber, both of North Haven, and Henri Ulrich, Northford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 93,445, Nov. 27, 1970, Pat. No. 3,669,080, which is a continuation-in-part of Ser. No. 39,178, May 20, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 291,754

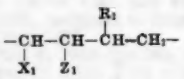
Int. Cl. C08f *27/00, 47/12*

U.S. Cl. 204—159.14 6 Claims

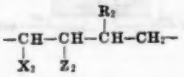
Radiation (thermal and light)-sensitive polymers are provided and are characterized by (1) a recurring unit of the formula:



wherein R_2 is lower-alkoxy or phenyl, one of X and Y is —COOR and the other is $—COR_1$, R is an azidosulfonylcarbanilyloxy alkylene group and R_1 is —O—dye, —NH—dye or hydroxyarylamino, or (2) a combination in the same polymer chain of recurring units having the formulas:



wherein one of X_1 and Z_1 represents —COOH and the other represents —COOR as defined above, and



wherein one of X_2 and Z_2 represents —COOH and the other represents $—COR_1$ as defined above. The polymers can be chemically bonded to substrates, such as those containing C — H bonds only (e.g., polyolefins), which are not normally dye receptive. The bonding is effected by exposure to appropriate radiation; the exposure can be carried out imagewise to produce an appropriate image on the substrate. Accordingly, the polymers of the invention find use in the photoresist, printing and like arts.

3,734,845

PROCESS TO IMPROVE THE EFFICIENCY OF PHOTOCHEMICAL REACTIONS

Jean-Claude Bravi, Pau, Claude Poulain, Orsay, and Claude Viallet, Pau, France, assignors to Society Anonyme dite: Aquitaine Total Organico, Paris, France

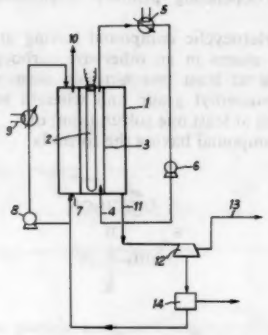
Filed Mar. 16, 1971, Ser. No. 124,720

Claims priority, application France, Mar. 17, 1970, 7009500; Jan. 21, 1971, 7101975

Int. Cl. B01j *1/10;* C07c *3/24*

U.S. Cl. 204—162 XM 5 Claims

A process for the continuous preparation of cycloalkanone oximes by the action of nitrosyl chloride prepared in situ in a sulphuric medium on a liquid cycloalkane or a cycloalkane dissolved in an organic solution which is inert under the reaction conditions, under the effect of actinic radiation, characterized by the fact that, for a given concentration of oxime in the sulphuric medium, the minimum temperatures of the surfaces transmitting the light energy and in contact with the reactive



mixture are made to vary in inverse proportion to the percentage weight of the sulphuric medium in the reactive mixture.

3,734,846

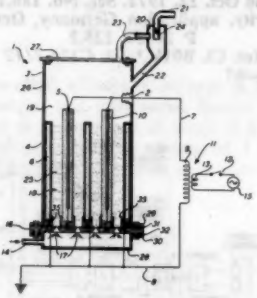
PROCESS FOR PRODUCING OZONE USING A FLUIDIZED BED DIELECTRIC

Ralph McNabney, Morristown, N.J., and Derk Th. A. Huibers, Naarden, Netherlands, assignors to Airco Inc., New York, N.Y.

Division of Ser. No. 878,494, Nov. 20, 1969, Pat. No. 3,654,126. This application July 1, 1971, Ser. No. 159,047

Int. Cl. C01b *13/10, 13/12*

U.S. Cl. 204—176 4 Claims



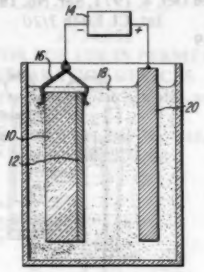
Apparatus and method are disclosed for high efficiency electrical conversion of oxygen to ozone. An oxygen-containing gas is passed upwardly through a particulate dielectric contained between spaced electrode surfaces, whereby a fluidized bed is established consisting of a suspension of said dielectric particles in the streaming gas. Means are present for simultaneously maintaining a silent electrical discharge across the spaced electrodes and through the fluidized bed. The bed acts as a highly effective heat sink and also promotes the presence of high-frequency components in the current waves passing between electrodes, as a result of which increased electrical efficiency and increased ozone output is enabled in the conversion process.

3,734,847

ELECTROPHORETIC DEPOSITION OF POWDERED MATERIAL ON AN INSULATING SUPPORT

Donald Richard Tshudy, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,326
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 1 Claim



A method for producing a coating of particles, such as phosphor particles, upon an electrically-insulating support comprising

(a) depositing an electrically-conducting undercoating, such as aluminum or magnesium metal, on the support,

(b) electrophoretically depositing a coating of the particles on the undercoating,

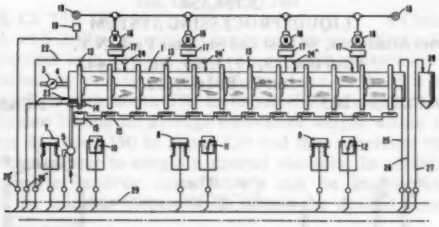
(c) and then converting the undercoating to a material which enhances the adherence of the deposited coating to the support.

3,734,848

EQUIPMENT FOR THE CONTROL AND THE REGULATION OF AN ALKALI-CHLORINE ELECTROLYSIS PLANT WITH MERCURY-CATHODE CELLS

Luigi Bertoni, Giancarlo Pizzamiglio, and Renato Fava, Mantova, and Giordano Cimarosti, Roverbella, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 25, 1971, Ser. No. 128,070
Claims priority, application Italy, Mar. 25, 1970, 22,407/70
Int. Cl. C22d *1/04*; B01k *3/00*; B23p *1/12*
U.S. Cl. 204—220 8 Claims

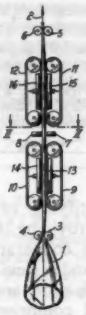


Equipment for the operation of an alkali-chlorine electrolysis plant of the type employing series-connected mercury cathode cells comprising, for each cell, a device responsive to brine flow variations for monitoring current decreases at the first anodic descent bar of the cell, a device for monitoring overloads at each of the anodic ascent bars, a device regulating the cathodic mercury delivery and an instrument for metering the delivery of brine to each cell. These devices are arranged to regulate the inter-electrode gaps in the cells and to disconnect the cells when necessary.

3,734,849

APPARATUS FOR THE MANUFACTURE OF BONDED PLASTIC SACKS EMPLOYING AN ELECTRICAL FIELD AND AN IONIZABLE GAS

Herbert Schmedding and Helmut Helbig, Lengerich, Germany, assignors to Windmoller & Holscher, Lengerich, Westphalia, Germany

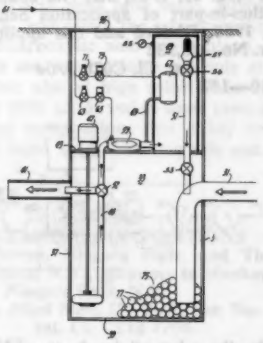
Original application Jan. 3, 1967, Ser. No. 607,021, now Patent No. 3,554,828, dated Jan. 12, 1971. Divided and this application Dec. 30, 1969, Ser. No. 1,915
Claims priority, application Germany, Feb. 14, 1966, W 40,937
Int. Cl. B01k *1/00*; C23c *11/00, 17/00*
U.S. Cl. 204—312 10 Claims

Apparatus for the manufacture of sacks made of plastic material having a station for pretreating the inside surfaces of the plastic tube by moving the tube through a pretreating electric field while the inside surfaces of the tube are separated by an ionizable gas. Guide means are provided for flattening the sides of the tube so that the inside surfaces are slightly spaced apart when the pretreatment occurs.

3,734,850

WASTEWATER TREATMENT SYSTEM

Fred A. Karr, Redwood City, Calif., assignor to Shasta Beverages Division of Consolidated Food Corporation, Hayward, Calif.

Filed Sept. 8, 1971, Ser. No. 178,739
Int. Cl. C02c *1/08*
U.S. Cl. 210—3 10 Claims



Apparatus and method for injecting air or other oxygen-containing gas under pressure into wastewater from within a gas porous shell capable of passing gas bubbles of a size (e.g., 1–2 microns or less) for retention by the wastewater. The injection is through elements at the bottom of a sump or on stream in a recycle line to and from

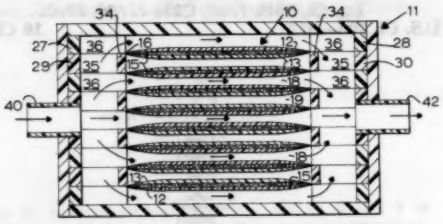
the sump. A bed of perforate balls on the bottom of the sump provides an excellent surface area for bacterial treatment as by coated enzymes injected into the system.

3,734,851

METHOD AND DEVICE FOR PURIFYING BLOOD

Kenneth N. Matsumura, 2 Claremont Crescent, Berkeley, Calif.

Filed Dec. 29, 1969, Ser. No. 888,733
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—22 18 Claims



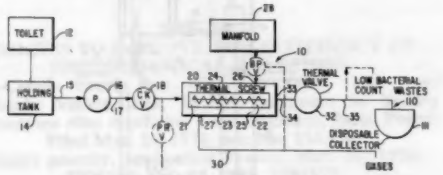
A method for hepatifying, or purifying animal blood of living animal and providing it with desirable liver cell metabolic products, in cooperation with or substitution for the animal liver; and a device for carrying out such hepatification or purification and provision of desirable products. The method comprises flowing animal blood over a first semi-permeable membrane, flowing a dialysate liquid over a second semi-permeable membrane, maintaining a layer of living liver cells between the two membranes and out of contact with the blood and the liquid, and withdrawing impurities from the blood into the dialysate liquid, and restoring liver cell products to the blood. The device comprises at least one hepatification unit having a first semi-permeable membrane, a second semi-permeable membrane, a layer of living liver cells disposed between such membranes, means for introducing blood over a surface of one membrane, means for introducing dialysate liquid over a surface of the other membrane, and means to maintain the blood, liquid and liver cells out of contact with each other.

3,734,852

WASTE DISPOSAL ASSEMBLY

A. Gale Borden, 5 Central Drive, Port Washington, N.Y. 11050

Application Aug. 25, 1969, Ser. No. 852,859, which is a continuation-in-part of application Ser. No. 724,988, Apr. 29, 1968. Divided and this application Feb. 14, 1972, Ser. No. 226,332
Int. Cl. C02b *3/04*
U.S. Cl. 210—152 3 Claims



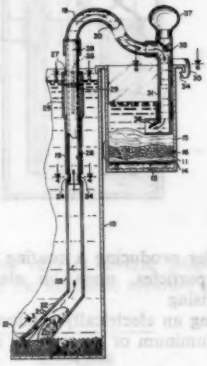
Process for the substantial reduction of bacterial count in sewage waste and assembly for treating same. The assembly comprises means for conveying sewage waste material to a treatment zone, means for retaining the waste material therein, temperature control means to insure that the contents retained in the treatment zone attain a temperature at least that of boiling water and means for passing the treated sewage waste from the treatment zone so that upon discharge of the treated waste material, substantially all of the bacteria have been destroyed.

3,734,853

SUCTION CLEANER FOR AQUARIUMS

Tibor Horvath, Brooklyn, N.Y., assignor to Holvin Products Co., Inc., Brooklyn, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,331
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 9 Claims



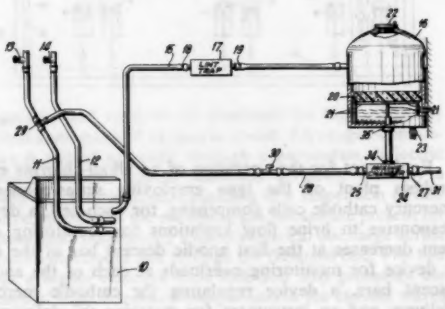
In aquarium tanks having a separate filter tank from which water is pumped from below layers of filter material into the aquarium and a syphon returning water from the aquarium to the filter tank, a suction cleaner is provided to replace or augment the syphon return, the suction cleaner having a suction arm with an upper portion grasped by the hand of a user, a flared, offset, and rotatable end to suck up debris on the bottom of the aquarium, and means to reduce and control the flow into the lower end of the arm, a syphon leg extending into the filter tank, flexible tubing connecting the suction arm and the syphon leg, and pump and valve means to start the action of the suction cleaner as a syphon. The means to reduce and control the flow into the suction arm may be a bypass opening or a valve in the arm activated to reduce flow therethrough when the arm is raised by its upper end.

3,734,854

LIQUID PROCESSING SYSTEM

James Altadonna, 90 East 2nd St., Deer Park, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,442
Int. Cl. B01d *35/02*
U.S. Cl. 210—203 5 Claims



A liquid processing system for the treatment of a liquid byproduct heretofore unfit for reuse or disposal due to the

presence therein of impurities, the system providing first a filter for the removal of solid impurities, a second filter for the removal of foam as well as additional solid impurities and finally a mixing chamber for mixing the liquid byproduct, heretofore filtered, with quantities of the liquid byproduct in its pure state, in such proportions and in such amounts so as to provide upon discharge from the system, a virtually pure, reusable liquid.

3,734,855
CONNECTOR FOR USE IN PERMEABILITY SEPARATION DEVICES

Ernest Robert Sawyer, Solana Beach, Calif., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,156
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**

A new device is disclosed for connecting headers, turnarounds, and the like to membrane support tubes. The device comprises a plastic adapter tube for insertion within a permeable coated tube, having an O-ring seal at its end, and includes a sleeve which snugly fits around the adapter and effects a seal between the adapter and the membrane portion of the tube when pressure is applied from inside the tube through the action of pressure applied in a permeability separation process. In a variation of the invention, a guard is provided for retaining a volume displacement rod within the membrane coated tube.

3,734,856
USE OF MICELLAR DISPERSIONS AS DRILLING FLUIDS

Marion O. Son, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 792,886, Dec. 16, 1968. This application Aug. 30, 1971, Ser. No. 176,272
Int. Cl. C10m *1/40*
U.S. Cl. 252—8.5 M **8 Claims**

A well drilling process is improved by using a micellar dispersion as a drilling fluid. The micellar dispersion is obtained by mixing about 10% to about 95% of a hydrocarbon with about 5% to about 40% of a petroleum sulfonate having an average equivalent weight within the range of about 350 to about 520 and then admixing with sufficient water to obtain a desired viscosity. In addition, electrolytes and/or cosurfactants can be incorporated into the micellar dispersion to obtain the desired viscosity.

3,734,857
LIQUID PETROLEUM HYDROCARBONS CONTAINING AZO DYES

Ugo Moiso, Saronno, and Sisto Papa, Milan, Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,040
Claims priority, application Italy, Mar. 11, 1970, 21,749/70
Int. Cl. C10m *1/20, 1/32;* C10l *1/22*
U.S. Cl. 252—51.5 R **4 Claims**

Concentrates of azo dyes in organic solvents are useful in coloring various materials, including inks, synthetic plastic materials, wood substitutes and, in particular petroleum derivatives like gasoline, lubricating oils, and other similar liquid petroleum distillates and for other purposes.

3,734,858
PRE-ELECTRIC SHAVE COMPOSITIONS

Graham Barker, Fair Lawn, and Ronald H. Gordon, New Brunswick, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,140
Int. Cl. C11d *17/04*
U.S. Cl. 252—90 **6 Claims**

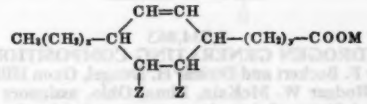
Pre-electric shave composition and process for shaving utilizing same whereby improved skin lubrication is obtained, said composition being a self-propelled, quick-breaking foam comprising (a) a cosmetic absorbent powder, (b) an aqueous alcoholic carrier medium, (c) a surfactant being a member of the group of ethoxylated fatty acids or alcohols, glycerol and polyglycerol esters of fatty acids and certain cationic pyridinium compounds. and (d) an aerosol propellant.

3,734,859
DICARBOXYLIC ACID SOAPS

Benjamin F. Ward, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,458
Int. Cl. C11d *9/00*
U.S. Cl. 252—108 **14 Claims**

Dicarboxylic acid soap compositions comprising a compound of the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, Z is a member of the group consisting of hydrogen and $COOM_1$, with one Z of each moiety, and M and M_1 are selected from the group consisting of hydrogen, sodium potassium, lithium, ammonium, organic amines, and mixtures thereof in an amount sufficient to impart detergency to said compositions, and water. Another aspect of this invention is that soap of the above composition may be blended at from 5% to 90% by soap weight with coconut fatty acids, tallow fatty acids, tall oil fatty acids, oleic acid, soya fatty acids, safflower oil and other fatty acids, and retain the advantageous properties of using C_{21} dicarboxylic acid soaps alone. The soaps and soap blends are water soluble not only at low solids concentration but also at high solids concentration, for example, above 40% solids and in some cases above 90% solids. The soap compositions find utility among other places as liquid hand soaps, cleaning aids and shampoos.

3,734,860
CLEANING COMPOSITIONS

Jonathan L. Bowen, Niagara Falls, and Theodore H. Dexter, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,471
Int. Cl. C11d *7/06*
U.S. Cl. 252—158 **16 Claims**

Basic materials such as sodium or potassium hydroxide are suspended uniformly in a liquid hydrocarbon such as perchloroethylene by the addition thereto of a suspension agent selected from carboxylic acids containing from 8 to 22 carbon atoms, or metal salts or esters thereof. In combination with a water-active metal such as aluminum, such compositions find utility as drain cleaners.

3,734,861

SYNERGISTIC METAL SEQUESTRANT

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 680,011, Nov. 2, 1967. This application July 13, 1970, Ser. No. 54,663

The portion of the term of the patent subsequent to May 11, 1988, has been disclaimed

Int. Cl. C02b *1/22, 5/06*

U.S. Cl. 252—180 7 Claims

Mixtures of tris(hydroxymethyl)phosphine oxide, and tris(N-acetoaminomethyl)phosphine as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,734,862

NOVEL POLYCHLORO-1,3-DIOXOLANES

Donald Roy Maulding, Branchburg Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,296

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 CL 5 Claims

Novel polyhalo-1,3-dioxolanes having from 2 to 5 halo substituents. These compounds are useful in a composition for producing chemiluminescent light, and as biocides.

3,734,863

HYDROGEN GENERATING COMPOSITIONS

Werner F. Beckert and Ottmar H. Dengel, Oxon Hill, Md., and Rodger W. McKain, Lima, Ohio, assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of abandoned application Ser. No. 872,419, Oct. 29, 1969. This application June 11, 1971, Ser. No. 152,422

Int. Cl. C01b *1/05;* C09k *3/02*

U.S. Cl. 252—188 12 Claims

Solid compositions, stable at ambient temperatures, which generate hydrogen gas when heated to initiate the reaction between the components of the composition.

The compositions comprise certain ammonium salts such as NH_4Cl and complex hydrides such as $LiAlH_4$ and $NaAlH_4$ or certain hydrazine derivates such as $N_2H_6Cl_2$ and complex hydrides such as $NaBH_4$.

3,734,864

AQUEOUS GEL FOR SLURRY EXPLOSIVES COMPOSITION AND METHOD OF PREPARING SAID GEL

William Allan Craig, Glasgow, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,797

Claims priority, application Great Britain, Nov. 30, 1970, 56,694/70

Int. Cl. B01j *13/00*

U.S. Cl. 252—315 8 Claims

Aqueous gel for slurry explosive composition containing at least one inorganic oxygen-supplying salt and as a thickener, a macromolecular compound containing vicinal cis-hydroxyl groups (e.g., guar gum) cross-linked with compound of tellurium VI. Aqueous gel is prepared by method in which the macromolecular compound dissolved in water is cross-linked with the compound of tellurium VI and mixed with the inorganic oxygen-supplying salt(s). The aqueous gels are useful as general binding and thickening agents.

3,734,865

SUBSTITUTED GAMMA-BUTYROLACTONES, AMINE DERIVATIVES THEREOF AND ORGANIC FLUIDS CONTAINING SAME

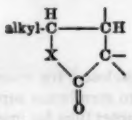
El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 799,939, Feb. 17, 1969, which is a continuation-in-part of abandoned application Ser. No. 714,447, Mar. 20, 1968. This application Aug. 30, 1971, Ser. No. 176,267

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 A 9 Claims

Gamma-alkyl-gamma-butyrolactones having an alkyl substituent of at least 16 carbon atoms in length, preferably at least 25 carbon atoms, are formed by reacting a monoolefin with a carboxylic acid in the presence of a reducible metal ion of higher-valent form, such as the manganic ion, Mn^{+3}. The resulting lactones are useful as antiwear agents and for improving the adherence of wax coatings of paper and, upon reaction with amines, polyalkylenepolyamines, for providing novel lactams and bislactams useful as multifunctional agents in lubricants, fuels, coolants and other organic fluids. Thus, the compounds of this invention are of the general structure



the alkyl group being as defined above, X being oxygen, imino, alkylimino, polyalkylenepolyamino or lactam(polyalkylenepolyamino) and the dangling valences being hydrogen or lower alkyl (that is, no greater than 6 carbon atoms).

3,734,866

PREPARATION OF POLYMERIC AROMATIC COMPOSITIONS

Sargeant E. Aylies, Youngstown, N.Y., and Mial T. Hillhouse, Alexander Kyriakis, and Brian W. Pengilly, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Application Ser. No. 648,933, June 26, 1967, now Patent No. 3,634,339, dated Jan. 11, 1972, which is a continuation-in-part of abandoned application Ser. No. 361,551, Apr. 21, 1964. Divided and this application June 9, 1971, Ser. No. 151,518

Int. Cl. C08g *33/00, 33/02*

U.S. Cl. 260—2 R 2 Claims

The invention relates to polymeric aromatic compounds and to the preparation of these materials by polymerizing the monomeric aromatic compound using a catalyst comprising an active metal halide, chloranil and water. These polymers are linear chains of aromatic rings attached together.

3,734,867

METHOD OF PRODUCING POROUS POLYMERIZATES FROM WATER-IN-OIL EMULSIONS

Gunther B. G. P. Will, Zimmerstrasse 10-12, 61 Darmstadt, Germany

Continuation of Ser. No. 879,943, Nov. 25, 1969, abandoned. This application Dec. 17, 1971, Ser. No. 209,408

Int. Cl. C08f *47/08, 1/13*

U.S. Cl. 260—2.5 R 15 Claims

Polymerization of water-in-oil emulsions which contain a polymerizable monomer, a water-in-oil emulsifier, and an oil-in-water emulsifier (in an amount less than that required to break the emulsion) is disclosed. Various products and fields of application are also disclosed, including especially the manufacture of shaped products.

3,734,868

LOAD-BEARING FLEXIBLE POLYURETHANE FOAMS AND METHOD OF MAKING THE SAME

Heinz Uelzmann, Cuyahoga Falls, and Edwin M. Maxey, Kent, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,426
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 AM 19 Claims

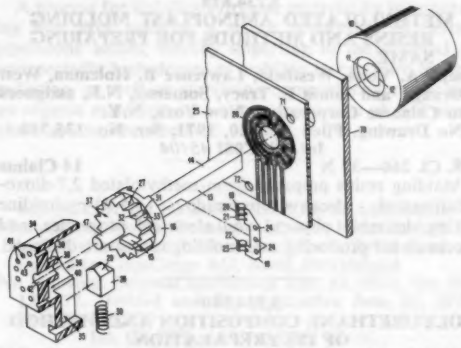
The load carrying capacity of flexible polyurethane foams is improved by the use of minor amounts of certain primary and secondary amine compounds which are insoluble in the polyol at temperatures up to about 100° F. in conjunction with certain tertiary amine catalysts.

3,734,869

ROTARY SWITCH ASSEMBLY WITH ADJUSTABLE PROGRAMMING LIMIT MECHANISM

Edward A. Menard, Lafayette, and David O. Webster, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,518
Int. Cl. H01h 21/78
U.S. Cl. 200—11 R 20 Claims



A multifunction switch selectively providing a multiposition rotary, a multiposition toggle, or a momentary toggle switch function. A switch rotor carries a movable switch member. A detent means cooperates with the rotor and establishes a plurality of stable rotor positions and intermediate unstable rotor positions. A selectively changeable switch function program member selectively limits movement of the rotor relative to its stable and unstable positions in a manner to achieve the desired switch function.

3,734,870

PREPARATION OF FOAMED BODIES USING A UREA BLOWING AGENT

Gunter Schroeder, Ober-Ramstadt-Eiche, and Wolfgang Gaenzler, Darmstadt, Germany, assignors to Rohm G.m.b.H., Darmstadt, Germany

No Drawing. Continuation-in-part of application Ser. No. 758,695, Sept. 10, 1968. This application June 17, 1971, Ser. No. 154,159
Claims priority, application Germany, Sept. 16 ,1967, R 46,928
Int. Cl. C08f 27/08, 47/10; B29d 27/00
U.S. Cl. 260—2.5 N 8 Claims

A two-step method for preparing shaped foamed bodies from a plastic comprising a urea blowing agent and a copolymer including acrylic or methacrylic acids and their amides or nitriles which comprises first heating the unconfined plastic to foam it partially and then foaming it further by heating at a higher temperature while the plastic is confined.

3,734,871

POLYURETHANE FOAMS PRODUCED FROM NITROGENOUS POLYETHERS

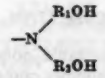
Christian Burba, Wilhelmstr. 1, Luenen, Germany; Manfred Drawert, Selmer str. 4, Werne, Germany; and Hartmut Voigt, Fritz-Husemann-str. 22, and Eugen Griebsch, Steinstr. 22, both of Unna, Germany

No Drawing. Original application Aug. 8, 1969, Ser. No. 848,718, now Pat. No. 3,697,458. Divided and this application Jan. 24, 1972, Ser. No. 220,531
Claims priority, application Germany, Aug. 15, 1968, P 17 93 201.3
Int. Cl. C08c 17/08
U.S. Cl. 260—2.5 AQ 1 Claim

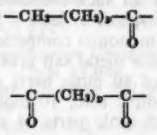
Polyhydroxy compounds obtained by propoxylation of compounds of the formula

$$(HO)_n—R—[OCA_2CH(OH)CH_2—]_q—Y_m$$

where Y is —OH or



R is a divalent or trivalent hydrocarbon radical, or



or

R_1 and R_2 are lower alkylene; and *m*, *n*, *p*, and *q* have small integral values or are, in part, zero. Methods of making these compounds by propoxylation of the reaction product of: (1) a dialkanolamine and a monohalohydrin or epihalohydrin; (2) the hydrolyzed or dialkanolamine-reacted reaction product of a diol or triol and an epihalohydrin; or (3) the reaction product of a halocarboxylic acid or dicarboxylic acid and a dialkanolamine. Methods of making rigid polyurethane foams from these polyhydroxy compounds.

3,734,872

DISPERSION OF FINELY DIVIDED PIGMENT PARTICLES AND PROCESS FOR PREPARATION OF THE SAME

Saburo Wakimoto, Nishinomiya, Hideyoshi Tugukuni, Sakai, and Masafumi Kano, Kyoto, Japan, assignors to Dai Nippon Toryo Co., Ltd., and Sinloihi Co., both of Osaka-shi, Japan

Filed Sept. 2, 1971, Ser. No. 177,561
Claims priority, application Japan, Dec. 22, 1970, 45/115,351; Aug. 23, 1971, 46/64,177, 46/64,178, 46/64,179, 46/64,180
Int. Cl. C09d 3/48
U.S. Cl. 260—22 CB 14 Claims

A dispersion of finely divided pigment particles useful as printing ink and paint which comprises a copolymer composed of copolymerizable unsaturated monomers uniformly colored with a dyestuff incapable of being copolymerized with said copolymer, said colored copolymer being dispersed uniformly in an organic liquid having no polarity or a low polarity, by a protective layer of a stabilizer and a process for the preparation of the dispersion.

3,734,873
RAPID DISSOLVING WATER-SOLUBLE POLYMERS
Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Continuation of application Ser. No. 172,946, Aug. 18, 1971, which is a continuation-in-part of application Ser. No. 92,031, Dec. 15, 1970, now Patent No. 3,624,091. This application Aug. 7, 1972, Ser. No. 278,329
Int. Cl. C08g *47/16, 47/18*
U.S. Cl. 260—29.6 H 13 Claims

Water-soluble vinyl addition polymers may be rapidly dissolved in water by first dispersing these polymers into a water-in-oil emulsion and then inverting these emulsions in water. The inversion of the emulsion releases the polymer into water as a solution.

3,734,874
POLYESTERS AND POLYESTERAMIDES CONTAINING ETHER GROUPS AND SULFONATE GROUPS IN THE FORM OF A METALLIC SALT
Charles J. Kibler and Gerald R. Lappin, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 695,339, Jan. 3, 1968. This application Feb. 27, 1970, Ser. No. 15,193
Int. Cl. C08g *17/06, 20/30*
U.S. Cl. 260—29.2 E 40 Claims

Water-dissipatable, meltable polyesters and polyesteramides derived from monomer components which include dicarboxylic acid, hydroxycarboxylic acid, aminocarboxylic acid, aminoalcohol, glycol, diamine or combinations of such monomer components wherein at least a part of the total of all such monomer components is a poly(ethylene glycol), and at least a part of said total is one or more of said monomer components substituted with one or more sulfonate metal salt groups. A typical polyester is composed of 80 mole parts of isophthalic acid, 10 mole parts of adipic acid, 10 mole parts of 5-sodiosulfoisophthalate, 20 mole parts of ethylene glycol and 80 mole parts diethylene glycol. Such polymers are useful as adhesives, coating materials, films, packaging materials and other products which can be dissolved, dispersed or otherwise dissipated in cold water, hot water or aqueous solutions.

3,734,875
AEROSOL BIRD REPELLENT COMPOSITION
Stanley H. Sekuler, Silver Spring, Md., assignor to L & S Associates, Incorporated
No Drawing. Filed June 15, 1971, Ser. No. 153,436
Int. Cl. C08f *45/28, 45/36, 45/34*
U.S. Cl. 260—31.2 R 9 Claims

An aerosol composition useful for repelling birds from a given locus comprising polyisobutylene, at least one inert nonpolar organic solvent, and an aerosol propellant, and methods of applying the same to a locus.

3,734,876
CROSS-LINKED POLYALKYLENE OXIDE
Nan S. Chu, Hartsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 6, 1971, Ser. No. 160,134
Int. Cl. C08g *51/28*
U.S. Cl. 260—33.6 R 11 Claims

A process for chemically cross-linking poly(alkylene oxide) of molecular weight of at least 100,000 which comprises contacting said poly(alkylene oxide) with a suitable cross-linking agent in the presence of a solvent and a free radical catalyst, at a temperature and for a time sufficient to cross-link said poly(alkylene oxide), said poly(alkylene oxide) being present in said solvent in an amount within the range of from about 1 percent to about 10 percent by weight based on the weight of the solvent.

3,734,877
FLAME RETARDANT COMPOSITION
George Christie, Jr., Loudonville, N.Y., assignor to General Electric Company
No Drawing. Filed June 17, 1971, Ser. No. 154,185
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 11 Claims

A silicone elastomer stock which exhibits improved flame resistance in the cured state consists essentially of a silicone elastomer, a filler and a small amount of a platinum compound in combination with triphenyl phosphite.

3,734,878
NON-BLOCKING ETHYLENE COPOLYMER COMPOSITION
Werner Claus von Dohlen, Charleston, W. Va., and Harvey Lionel Batleman, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,774
Int. Cl. C08f *45/44*
U.S. Cl. 260—32.6 PQ 20 Claims

Copolymers of ethylene with an acrylyl acid or salt thereof or a vinyl acylate or an alkyl acrylyl ester or an N-alkyl-N-vinyl acylamide are treated with an N,N′-di-n-alkyl terephthalamide to improve the blocking and slip characteristics of films produced therewith.

3,734,879
METHYLOLATED AMINOPLAST MOLDING RESINS AND METHODS FOR PREPARING SAME
Joseph A. Vona, Westfield, Lawrence B. Holzman, West Orange, and James E. Tracy, Somerset, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,750
Int. Cl. C08f *45/04*
U.S. Cl. 260—37 N 14 Claims

Molding resins prepared from methylolated 2,7-dioxo-4,5-dimethyl - decahydropyrimido - [4,5-d]-pyrimidine having desirable physical and electrical properties, and processes for producing said molding resins, are disclosed.

3,734,880
POLYURETHANE COMPOSITION AND METHOD OF ITS PREPARATION
Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation-in-part of application Ser. No. 155,280, June 21, 1971, which is a continuation of application Ser. No. 688,668, Dec. 7, 1967. This application June 28, 1972, Ser. No. 266,871
Int. Cl. C08g *22/00*
U.S. Cl. 260—37 N 9 Claims

A polyurethane composition resistant to phosphoric acid prepared by first forming a prepolymer by reacting is the presence of a 2,6-dialkylated para cresol a hydroxy-containing unsaturated polymeric polyol having a molecular weight of from about 1000 to about 5000 and a hydroxyl functionality of about 2.1 to about 2.8 and a liquid diphenyl methane diisocyanate followed by curing said prepolymer by reacting with an organic primary diamine.

3,734,881
ONE COMPONENT NON-TOXIC SELF-EXTINGUISHING SILICONE ELASTOMER
Ross A. Shingledecker, Elizabethtown, Ky., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed July 15, 1971, Ser. No. 163,113
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 18 Claims

A silicone elastomer composition free of sulfur, compounds of tin, mercury, bismuth, copper and sulfur of a polydiorganosiloxane, a silica or titanium dioxide filler, an acetoxysilane or ketoxime silane, carbon black and

a platinum compound are used as self-extinguishing elastomers which are non-toxic and cure at room temperature.

3,734,882

METHOD OF MAKING AN IMPROVED PROCESSABLE SILICONE RUBBER AND PRODUCT THEREOF

Thomas D. Talcott, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,599
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 23 Claims

Mixing a silicone rubber stock comprising an organosiloxane gum and a reinforcing silica filler with an organic titanate gives a silicone rubber stock with improved handling properties, increased flow resistance, improved processability and increased green strength.

3,734,883

STABILIZING ORGANIC MATERIAL WITH PIPERIDONE AZINES

Brian Holt, Royton, Lancs, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,801
Claims priority, application Great Britain, Apr. 16, 1970, 18,090/70; July 24, 1970, 35,954/70
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.8 N 4 Claims

A process for stabilising organic material by incorporating into said material a minor proportion of certain piperidone azines, thereby imparting to the material an unexpectedly high degree of stability to exposure to light radiation, as well as stabilising compositions comprising an organic material and a minor proportion of said piperidone azines, are disclosed.

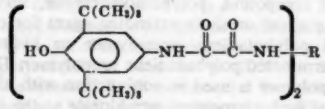
3,734,884

BISOXALIC ACID DIAMIDES AS STABILIZERS

Max Dunnenberger, Frenkendorf, and Hans Rudolf Biland, Gelterkinden, both of Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Apr. 12, 1971, Ser. No. 133,377. Divided and this application June 15, 1972, Ser. No. 263,339
Int. Cl. C07c *103/14;* C08f *45/60*
U.S. Cl. 260—45.9 NC 3 Claims

Bisoxalic acid diamines having the structure



where R is an alkylene group having 5 to 18 carbon atoms are stabilizers of organic materials such as polyolefins. These compounds are prepared by reacting an oxalic acid monoamide or the chloride or an ester thereof with an alkylene diamine.

3,734,885

STABILISING HOMO- OR COPOLYMERIC POLYOLEFINS WITH DIACYL DIHYDRAZIDES

Helmut Muller, Binningen, Basel-Land, Siegfried Rosenberger, Riehen, Basel-Land, and Heimo Brunetti, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 6, 1971, Ser. No. 141,027
Claims priority, application Switzerland, May 19, 1970, 7,371/70
Int. Cl. C08f *45/58, 45/60*
U.S. Cl. 260—45.85 B 17 Claims

A process for stabilising homo- or copolymeric polyolefins, especially polypropylene, with certain symmetrical or asymmetrical diacyl dihydrazides is disclosed, said diacyl dihydrazides possessing good colour properties, and said process being particularly advantageous with respect to thermooxidative decomposition in the presence of transition metals.

3,734,886

STABILIZED RUBBER CONTAINING 4-NITROSODIPHENYLHYDROXYLAMINE OR DERIVATIVE THEREOF

David Dodman, Peter Laithwaite, Boris Nicholas Leyland, and Peter Michael Quan, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,005
Claims priority, application Great Britain, Dec. 10, 1970, 58,688/70
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 R 5 Claims

4-nitrosodiphenylamines and salts and isocyanate adducts of these are antioxidants for rubbers. These compounds are resistant to extraction from the rubber by solvents.

3,734,887

COMPOSITIONS OF POLYAMIDE OF 2,2,4-AND/OR 2,4,4-TRIMETHYLHEXAMETHYLENE DIAMINES AND EPOXY COMPOUNDS

Karl Schmitt, Herne, Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, Germany, assignors to VEBA—Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

No Drawing. Continuation of application Ser. No. 744,625, July 15, 1968. This application Sept. 21, 1970, Ser. No. 74,242
Claims priority, application Germany, July 21, 1967, Sch 41,040
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN 17 Claims

Plastic of polyamide of 2,2,4- and/or 2,4,4-trimethylhexamethylenediamine, and an epoxy compound. The plastic is useful for production of shaped articles and coatings.

3,734,888

POLYKETALS OF AROMATIC POLYKETONES

Roland Darms, Therwil, Switzerland, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,509
Int. Cl. C08g *23/20*
U.S. Cl. 260—47 R 6 Claims

Polyketals based on aromatic polyketones and 1,2- or 1,3-glycols and a process for their preparation. The ketals are extrudable and solvent soluble, and are easily hydrolyzed to the original polyketone and glycol.

3,734,889

QUATERNIZED OLIGOMERS BASED ON UREAS, GUANIDINE AND GUANYLUREA

Stanley A. Lipowski, Livingston, and John J. Miskel, Jr., Mendham, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,970
Int. Cl. C08g *22/02, 41/00;* D21h *3/36*
U.S. Cl. 260—77.5 C 10 Claims

A polyamine having only one primary amino group and only one tertiary amino group is condensed with a difunctional reactant to form a pre-condensate. This pre-condensate is then extended and quaternized by further reaction with a chain extender which is a dihalogenated hydrocarbon ether. Alternatively, a diamine having one primary amino group and one tertiary group is condensed with a difunctional reactant to form a pre-condensate which is then extended and quaternized by further re-

action with a chain extender which is an epihalohydrin. The resulting products are useful as flocculents, as drainage aids, and as dry strength resins in paper manufacture.

3,734,890

PROCESS TO PRODUCE OILLESS ALKYDS

Thomas M. Powanda, Middlesex, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 796,575, Feb. 4, 1969. This application Apr. 8, 1971, Ser. No. 132,365

Int. Cl. C08g *17/04, 17/15*

U.S. Cl. 260—75 R 4 Claims

An improved process for producing an oilless alkyd capable of providing superior coating compositions which comprises producing an interpolymer, being substantially free of gelation by the reaction of a polyol having 3 to 4 hydroxyl functional groups, an aliphatic diol having 5 to 7 carbon atoms and a phthalic anhydride component in the presence of a catalytic amount of dialkyl stannic oxide wherein each alkyl group can contain from 1 to 6 carbon atoms.

3,734,891

TRANSESTERIFICATION CATALYSTS FOR PRODUCTION OF POLY (C_4 TO C_{12} ALKYLENETEREPHTHALATE)

William N. Knopka, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed May 24, 1971, Ser. No. 146,484

Int. Cl. C08g *17/13, 17/15*

U.S. Cl. 260—75 R 18 Claims

The process of preparing a poly(C_4 to C_{12} alkyleneterephthalate) resin comprising carrying out a transesterification reaction between a C_4 to C_{12} alkylene glycol and a lower dialkyl terephthalate in the presence of a transesterification catalyst represented by the formula M_2TiF_6, wherein M is a NH_4-radical, an alkali metal or alkaline earth metal, to form a prepolymer and then polycondensing said prepolymer.

3,734,892

ESTERIFICATION OF TEREPHTHALIC ACID WITH AN ALKYLENE GLYCOL IN THE PRESENCE OF AN ALKALINE SALT OF A GLYCINE COMPOUND

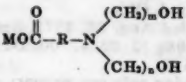
Robert Alden Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 883,355, Dec. 8, 1969. This application Sept. 30, 1971, Ser. No. 185,407

Int. Cl. C08g *17/13*

U.S. Cl. 260—75 R 20 Claims

The esterification of polycarboxylic acid with an alkylene glycol is described under conditions of direct esterification wherein the polycarboxylic acid is esterified with an alkylene glycol in the presence of a compound of the formula



wherein

M is an alkaline metal selected from the group consisting of sodium and potassium, or a tertiary alkyl amine,

R is CH_2, and

m and *n* are whole numbers from 2 to 4 wherein the number can be equal or unequal one to the other.

3,734,893

PROCESS FOR THE MANUFACTURE OF LINEAR AROMATIC POLY-1,3,4-OXADIAZOLES

Josef Studinka, Zurich, and Rudolf Gabler, Uitikon, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,676

Claims priority, application Switzerland, Oct. 29, 1970 15,981/70

Int. Cl. C08g *33/04*

U.S. Cl. 260—78.4 R 18 Claims

Process for the manufacture of linear aromatic poly-1,3,4-oxadiazoles by reacting in chlorosulphonic acid an inorganic hydrazine salt and an aromatic dicarboxylic acid.

3,734,894

METHOD OF CONTROLLING REACTION OF POLYISOCYANATE WITH POLYAMINE

Anthony F. Finelli and James C. West, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio.

No Drawing. Continuation of abandoned application Ser. No. 857,616, Aug. 27, 1969, which is a continuation of abandoned application Ser. No. 467,115, June 25, 1965. This application July 1, 1971, Ser. No. 159,045

Int. Cl. C08g *22/02, 22/18*

U.S. Cl. 260—32.8 N 2 Claims

This invention relates to a method of making polyurethane having improved resistance to discoloration, for instance, in a weatherometer for 100 hours. These polyurethanes are prepared by reacting a reactive hydrogen containing material such as polyesters, polyethers, polyester amides, castor oil, polycarbonate polyols and polydiene polyols and the hydrogenated polydiene polyols with a nonaromatic organic polyisocyanate and a nonaromatic primary diamine in the presence of sufficient inert solvent to render the mixture spreadable.

3,734,895

POLYBUTADIENEIMINE AND PROCESS FOR PREPARATION THEREOF

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Original application Dec. 5, 1969, Ser. No. 885,394. Divided and this application Aug. 31, 1971, Ser. No. 176,724

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—77.5 R 5 Claims

A novel compound, polybutadieneimine, serves as a crosslinking agent or chain-extending agent for carboxyl-terminated polybutadiene prepolymer or hydrogenated carboxyl-terminated polybutadiene prepolymer. The crosslinked prepolymer is used in conjunction with aluminum as the metal fuel, ammonium perchlorate as the inorganic oxidizer, and other additives to form a high temperature-resistant propellant. The chain-extended prepolymer is used in a like manner with the specified propellant ingredients.

3,734,896

CURING OF POLYURETHANE PREPOLYMERS

Tad L. Patton, Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 29,657, Apr. 17, 1970. This application Oct. 28, 1971, Ser. No. 193,588

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM 30 Claims

This application relates to the process and products resulting therefrom of curing polyisocyanate prepolymers with either HCN, mixtures of HCN and one or more polyisocyanates or with polycyanoformamides, all in the presence of a suitable catalyst, particularly CN^- and tertiary amines. The resulting polymers are chain-extended

through one or more heterocyclic rings, which are imino-imidazolidinediones and upon hydrolysis are converted to imidazolidinetrione rings.

3,734,897

POLYMERS CONTAINING SILVER AND COPPER DERIVED FROM CYANO AND SULFONIC CONTAINING MONOMERS

Arthur Stoy, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

No Drawing. Continuation of abandoned application Ser. No. 729,897, May 17, 1968. This application Feb. 9, 1971, Ser. No. 114,088

Int. Cl. C08f *13/00;* **C12g** *1/00;* **G03c** *1/86*

U.S. Cl. 260—79.3 MU **8 Claims**

New polymers and copolymers containing silver and/or copper, useful e.g. in manufacturing dialyse and filtration membranes, ion exchangers, light sensitive layers, catalysts and hydrophilic coatings, are prepared from copolymers or polymer mixtures containing both nitrile groups and strong acidic groups, by bringing them in contact with monovalent silver or copper ions or with their mixtures. Silver and/or copper are attached to nitrile groups by side valences, forming thus complex compounds. The probable formulae of the complex side-groups are: $-CN.Ag^+$ or perhaps $-CN.Ag^+.NC-$ and $-CN.Cu^+$ or perhaps $-CN.Cu^+.Cu^+.NC-$, the complex cations forming polymeric salts with strong acidic groups of the same or of an adjoining macromolecule, to which all said nitrile and strongly acidic groups are attached as their side substituents.

3,734,898

PROCESS FOR THE PREPARING OF RANDOM COPOLYMERS OF CONJUGATED DIENES AND VINYL AROMATIC HYDROCARBONS

Koei Komatsu; Shigeki Hayashi; Akira Ohishi, and Mashato Sakai, all of Yokohama, Japan, assignors to Japan Synthetic Rubber Co. Ltd., Tokyo, Japan

Claims priority, application Japan, Apr. 10, 1970, 45/30161

Filed Apr. 5, 1971, Ser. No. 131,508

Int. Cl. C08f *19/06, 19/08*

U.S. Cl. 260—84.3 **11 Claims**

A process for copolymerization of a conjugated diolefin with a vinyl aromatic hydrocarbon by a lithium type initiator in the presence of a randomizer selected from anionic surface active compounds having a hydrophilic group represented by $-SO_3M$ or $-OSO_3M$ where M is Na or K, in 1 - 20 parts by weight of a hydrocarbon or halogenated hydrocarbon solvent per 1 part by weight of the monomers, which comprises initiating the polymerization reaction at 20°C. - 90°C. and polymerizing substantially all monomers at the maximum temperature below 150°C. without removal of polymerization heat.

3,734,899

POLYMERIZATION PROCESS AND CATALYST SYSTEM

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,531

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—93.7 **6 Claims**

Utilization of a catalyst system formed by admixing (a) a compound of the formula R_nAlX_{3-n}; (b) a titanium trichloride-aluminum trichloride complex of the approximate formula $TiCl_3 \cdot \frac{1}{3}AlCl_3$ and (c) a compound of the formula $M(NR_2)_m$ in the polymerization of 1-olefin results in the increased production of polymers. In the above formulas, R is selected from alkyl, cycloalkyl and aryl groups and combinations thereof, having from 1 to 12 carbon atoms, M is a Group IV–A or IV–B metal, *n* is 1, 2 or mixtures thereof, X is halogen and *m* is the valence of M.

3,734,900

POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed July 8, 1970, Ser. No. 53,294

Int. Cl. C08d *1/14, 1/20, 3/08*

U.S. Cl. 260—94.3 **7 Claims**

There is disclosed a method for the polymerization of butadiene or butadiene in mixture with other diolefins such as isoprene, 2-ethyl butadiene, 2,3-dimethyl butadiene and the like, with a catalyst system comprising (1) an organometallic compound in which the metal is from Groups I, II and III of the Periodic System, (2) a nickel compound from the group of carboxylic acid salts of nickel, organic complex compounds of nickel or nickel carbonyls, (3) a fluorine containing compound from the group of metal fluorides and complexes thereof and (4) a compound containing a hydroperoxide group. The polymers contain a high proportion of cis 1,4 content and find use as synthetic rubbers in such products as tires and tire treads.

3,734,901

DEFATTED SOYBEAN FRACTIONATION BY SOLVENT EXTRACTION

Lester P. Hayes and Ross P. Simms, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Sept. 28, 1970, Ser. No. 75,933

Int. Cl. A23j *1/14*

U.S. Cl. 260—123.5 **25 Claims**

Soya protein concentrates are prepared by removing residual lipid and water-soluble constituents from defatted soybean flakes. The residual lipids are initially extracted from the soybean flakes with a hydrocarbon/monohydric alcohol solvent followed by aqueous extraction of the water-soluble constituents. A high lecithin-containing oil is obtained by admixing the resultant lipid miscella and aqueous miscella and then effectuating an oil phase separation from the admixture.

3,734,902

HIGHLY SOLUBLE GLUCOSIDE COMPOSITIONS AND METHOD OF PREPARING SAME

Andrew McNaughton, P.O. Box 778, Mill Valley, Calif. 94941; and Ernst T. Krebs, 1348 S. Van Ness Ave. 94109; and Charles Gurchot, 150 Palo Alto Ave. 94114, both of San Francisco, Calif.

Filed Nov. 26, 1969, Ser. No. 880,185

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **6 Claims**

A method of preparing a highly water soluble, but unstable form of glucoside compositions which comprises the steps of forming an aqueous solution of said composition, lowering the temperature and pressure to freeze said solution, and removing the water by sublimation whereby highly soluble crystals of said material are formed; and the compositions prepared by said method, particularly amygdalin monohydrate; said compositions having high water solubility in the ambient to blood temperature ranges whereby highly concentrated forms may be injected intravenously or intramuscularly for experimental or therapeutic purposes.

3,734,903

PENICILLINS DERIVED FROM THE REACTION OF ENAMINES WITH 6-ISOCYANATOPENICILLANIC ACID SACCHARIMIDE

James L. Diebold, Broomall, Joel S. Sanet, St. Davids, and Milton Wolf, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,848

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **2 Claims**

Novel penicillanic acid derivatives have been prepared by the reaction of an enamine with 6-isocyanatopenicillanic acid saccharimide.

3,734,904

6-(1-AMINOTHIOCYCLOALKANOYL AMINO) PENICILLANIC ACIDS

Gerhard R. Wendt, Havertown, Donald E. Clark, Norristown, and Norman H. Grant, Wynnewood, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,712
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 5 Claims

6-(1-aminothiocycloalkanoyl amino) penicillanic acids are prepared from the appropriate amino acid N-carboxy-anhydrides. The products exhibit anti-bacterial activity.

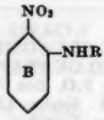
3,734,905

PROCESS FOR THE PREPARATION OF NAPHTHOYLENEBENZIMIDAZOLIUM DYESTUFFS

René Pierre Victor Roe, Rouen, André Adolphe René Levavasseur, Sotteville les Rouen, Robert Frederic Michel Sureau, Enghien les Bains, and Marie-Josephe Jeanne Alicot, Soisy Sous Montmorency, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed July 23, 1970, Ser. No. 57,753
Claims priority, application France, July 23, 1969, 6925113
Int. Cl. C07d 57/02
U.S. Cl. 260—247.2 A 6 Claims

A process for the manufacture of naphthoylenebenzimidazolium dyestuffs which comprises condensing, in the presence of acetic acid or one of its higher homologues and of iron, a naphthalic acid anhydride which may be substituted by one or more atoms of chlorine or bromine, by one or two hydroxy groups, by one or two O—Y groups, Y representing an alkyl, aralkyl or aryl group, or by a tertiary amino group, with a secondary amine of the formula:



(IV)

wherein the nucleus B may be substituted by chlorine or bromine atoms, methyl, O—Y, nitrile or trifluoromethyl groups and wherein R represents an alkyl, substituted alkyl or aralkyl group. These dyestuffs are useful for the colouration of polymers or copolymers of acrylonitrile.

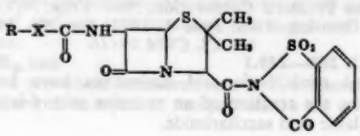
3,734,906

CARBAMATE AND THIOCARBAMATE DERIVATIVES OF 6-ISOCYANATO PENICILLANIC ACID SACCHARIMIDE

James L. Diebold, Broomall, and Milton Wolf, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,795
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 3 Claims

Novel antibiotic compounds have been prepared which have the following generic formula:



3,734,907

7 - [D-(α-AMINO-α-PHENYLACETAMIDO)] - 3 -(5-METHYL - 1,3,4 - OXADIAZOL - 2 -YLTHIOMETHYL) - 3-CEPHEM-4-CARBOXYLIC ACID AND SALTS THEREOF

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,173
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 7 Claims

7 - [D - (α - amino-α-phenylacetamido)]-3-(5-methyl-1,3,4-oxadiazol-2-ylthiomethyl)-3-cephem - 4 - carboxylic acid and its nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

3,734,908

1,2,4-OXADIAZINE-3-ONES

Daniel Makula and Monique Druet, Lyon, and Beatrice Gonthier, Caluire, France, assignors to Progil, Paris, France

No Drawing. Original application Apr. 1, 1970, Ser. No. 24,859, now Pat. No. 3,696,099. Divided and this application May 5, 1972, Ser. No. 250,814
Int. Cl. C07d 87/52
U.S. Cl. 260—244 R 12 Claims

1,2,4-oxadiazine-ones, useful as algicides, bactericides and fungicides, are obtained by reacting an N-hydroxyurea and a dihalogenated organic derivative having halogen atoms on two adjacent carbon atoms.

3,734,909

2-GUANIDINO-4,6-BIS-AMINO-S-TRIAZINES

Denis Varsanyi, Arlesheim, and Willy Roth, Aargau, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 672,743, Oct. 4, 1967. This application Feb. 23, 1971, Ser. No. 118,153
Claims priority, application Switzerland, Oct. 27, 1966, 15,590/66
Int. Cl. C07d 55/22, 93/10
U.S. Cl. 260—249.6 7 Claims

Novel 2 - guanidino-4,6-bis-amino-s-triazine derivatives as well as quaternary and acid addition salts thereof and salts of certain of the novel s-triazines in which the latter constitute the anion are described, which contain, per molecule, two 2-guanidino-4-amino-s-triazine moieties linked with each other via different nitrogen atoms of a polybasic amine and which have wax-like properties and are useful as components in surface treating agents, especially in combination with conventional ingredients in compositions for the treatment of floor surfaces, such as natural and synthetic waxes, resins, silicones, inorganic and organic fillers, detergents and other surfactants, pigments, stabilizing agents and the like conventional adjuvants; the aforesaid novel s-triazine derivatives afford to the treated surfaces, among other advantages, high gloss and at the same time satisfactory antislip effects. They are also useful as textile softeners.

3,734,910

CERTAIN DIAZINYLCARBOXAMIDOETHYL-BENZENESULFONYLUREAS

Vittorio Ambrogia, Willy Logemann, Marcantonio Parenti, and Raffaele Tommasini, Milan, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

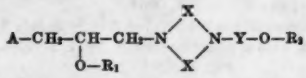
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,142
Claims priority, application Italy, Oct. 13, 1969, 23,275/69, 23,276/69
Int. Cl. C07d 51/36, 51/04
U.S. Cl. 260—250 A 11 Claims

New acylamino-alkyl-benzenesulfonyl ureas and acylamino-alkylbenzenesulfonyl-semicarbazides and process

for their preparation are disclosed, for example N-{4-[β-(2,6 - dimethoxy-pyrimidine - 4 - carboxamido)ethyl]benzenesulfonyl}-N'-cyclohexylurea. These compounds are useful for their hypoglycemic activity.

3,734,911
DIALKYL-XANTHINE DERIVATIVES
Walter Bestian, Braunschweiger Strasse 5, Bad Gandersheim, Germany
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,075
Claims priority, application Germany, Mar. 28, 1969, P 19 15 979.6-44
Int. Cl. C07d *57/48*
U.S. Cl. 260—256 **33 Claims**

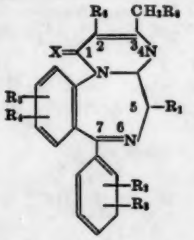
Dialkyl-xanthine derivatives including the pharmaceutically acceptable salts and quaternary ammonium salts characterized by their coronary dilating and central inhibiting activity and have the formula:



wherein A designates a 1,3-dimethyl-xanthine or a 3,7-dimethyl-xanthine radical, R_1 and R_2 each designate hydrogen, an aliphatic, cycloaliphatic, heterocyclic or aromatic acyl radical, X designates alkylene having 2 to 3 carbon atoms and Y designates alkylene having 2 to 4 carbon atoms.

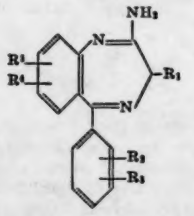
3,734,912
CERTAIN PYRIMIDO(1,2-a)(1,4)BENZODIAZEPIN-1(5H)-ONES
Arthur R. Hanze, deceased, by Janice W. Hanze, administratrix, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of Ser. No. 47,602, June 18, 1970. This application May 4, 1971, Ser. No. 140,238
Int. Cl. C07d *57/12*
U.S. Cl. 260—256.5 R **10 Claims**

7-phenylpyrimido[1,2-a][1,4]benzodiazepin-1(5H)-one of the Formula IX:



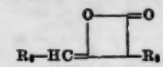
IX

wherein R_1 is selected from the group consisting of hydrogen, alkyl, hydroxy and acetoxy; wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, sulfonamido, amino, lower-alkyl, -alkoxy, -alkylthio, -alkylsulfinyl, -alkylsulfonyl, -alkanoylamino and -dialkylamino; wherein R_6 is hydrogen, loweralkyl, phenyl and benzyl; and wherein X is oxygen, sulfur or =NH, are synthesized by condensing a 2-amino-5-phenyl-3H-1,4-benzodiazepine of the Formula I



I

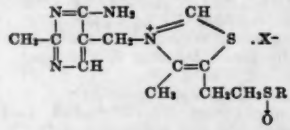
wherein R_1, R_2, R_3, R_4, and R_5 are defined as above with a diketene of the formula



wherein R_6 is defined as above, and heating the thus produced N-acetoacetyl derivative to obtain the compounds of Formula IX, in which R_1 is hydrogen or lower alkyl, and X is oxygen. These compounds, as well as products in which X is sulfur and =NH, and R_1 is also hydroxy and acetoxy, and their pharmaceutically acceptable acid addition salts are useful tranquilizer for mammals.

3,734,913
THIAMINE DERIVATIVES AND PRODUCTION THEREOF
Akira Takamizawa, Ibaraki, and Kentaro Hirai, Kyoto, Japan, assignors to Shionogi & Co. Ltd., Higashi-ku Osaka Prefecture, Japan
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,163
Claims priority, application Japan, Oct. 24, 1969, 44/85,578; Dec. 18, 1969, 44/101,829
Int. Cl. C07d *99/12*
U.S. Cl. 260—256.5 B **1 Claim**

Thiazolium salts represented by the formula:



wherein R represents a lower alkyl group, an aryl group, or an ar(lower)alkyl group, and X represents an acid residue or its acid addition salt, being useful as poultry anti-coccidial agents, are prepared by two routes.

3,734,914
2-OXODIHYDROQUINOLINETHIONO-PHOSPHORIC (PHOSPHONIC) ACID ESTERS
Walter Lorenz, Wuppertal-Cronenberg, and Ingeborg Hammann, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 5, 1971, Ser. No. 104,176
Claims priority, application Germany, Jan. 24, 1970, P 20 03 141.8
Int. Cl. C07d *33/46*
U.S. Cl. 260—268 P **6 Claims**

2-Oxodihydroquinolinethiono-phosphoric (-phosphonic) acid esters, i.e., O,O-dialkyl-[1-methyl-2-oxo-1,2-dihydroquinoline-(4)-yl]-thionophosphoric acid esters and alkyl-O-alkyl[1-methyl-2-oxo-1, 2-dihydroquinoline-(4).yl]thionophosphonic acid esters, which possess insecticidal properties.

3,734,915
N-[-(4 - PHENYL-1-PIPERAZINYL)ALKYL]BENZO[b] THIOPHENE OR BENZOFURAN - 2 - CARBOXAMIDES
William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 8,090, Feb. 2, 1970, now Patent No. 3,646,047. This application Oct. 15, 1971, Ser. No. 189,727
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 FT **8 Claims**

The preparation of N-(secondary-aminoalkyl)derivatives of benzo[b]thiophene-2-carboxamide and benzofuran-2-carboxamide by reacting the corresponding benzo[b]thiophene or benzofuran carboxylic acid with N,N'-

carbonyldiimidazole and subsequently with a primary alkylamine, is described. Other methods of preparing the compounds of this invention are also described.

3,734,916

N-(TERT-AMINOALKYL) - 2 - INDENECARBOXAMIDES AND METHODS OF PREPARING THE SAME

William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 8,091, Feb. 2, 1970, now Patent No. 3,646,048. This application Oct. 15, 1971, Ser. No. 189,737

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC 9 Claims

The preparation of N-(tert. aminoalkyl) derivatives of substituted or unsubstituted 2-indenecarboxamides, is described. The compounds are prepared by several methods, the preferred method being the reaction of a substituted or unsubstituted indenecarboxylic acid with N,N'-carbonyldiimidazole and subsequently with a substituted alkylenediamine. These compounds are useful primarily for their depressant and analgesic activity.

3,734,917

DIPYRIDINIUM DICHROMATE PROCESS OF MANUFACTURE

John R. Corrigan and William M. Coates, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Original application July 2, 1969, Ser. No. 838,705, now Patent No. 3,641,058, dated Feb. 8, 1972. Divided and this application July 29, 1971, Ser. No. 167,515

Int. Cl. C07d *31/24*

U.S. Cl. 260—270 16 Claims

An improved process for preparation of dipyridinium dichromate oxidizing reagent is provided.

3,734,918

WOOD ADHESIVE

Johann Mayer and Christof Schmidt-Hellerau, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,030

Claims priority, application Germany, Apr. 27, 1970, P 20 20 481.3; Sept. 2, 1970, P 20 43 440.6

Int. Cl. C08g *37/18, 51/24*

U.S. Cl. 260—29.3 8 Claims

A process for the production of an aminoplast adhesive resin for the preparation of weatherproof adhesive joints in which melamine urea, and a small amount of phenol are condensed with formaldehyde in a definite sequence.

3,734,919

4,5 - DI-HYDROPYRROLO[3,2,1-jk][1,4]BENZODIAZEPIN-7(6H)-ONES AND 4,5-DI-HYDROPYRROLO[1,2,3 - ef][1,5]BENZODIAZEPIN - 6(7H)-ONES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,693, now Patent No. 3,642,821. Divided and this application June 21, 1971, Ser. No. 155,282

Int. Cl. C07d *53/02*

U.S. Cl. 260—239.3 T 14 Claims

4,5,6,7 - tetrahydropyrrolo[3,2,1 - jk][1,4]benzodiazepines, 4,5,6,7 - tetrahydropyrrolo[1,2,3-ef][1,5]benzodiazepines, 4,5 - dihydropyrrolo[3,2,1-jk][1,4]benzodiazepin - 7(6H) - ones, 4,5-dihydropyrrolo[1,2,3-ef][1,5]benzodiazepin - 6(7H) - ones and processes for preparing the same. Said compounds exhibit tranquilizing and anticonvulsant activity.

3,734,920

DIQUINOLONOPYRIDONE

Chung C. Chen, Belleville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 11, 1967, Ser. No. 674,635, now Patent No. 3,586,684. Divided and this application Nov. 25, 1970, Ser. No. 92,902

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R 1 Claim

A class of compounds of which diquinolonopyridone is illustrative, and new and useful pigments formed therefrom along with a class of intermediates of which dimethyl-3,5-dianilinochelidamate is typical.

3,734,921

N-HALOQUINOLINIMIDES

Lubomir C. Vacek, Toledo, Ohio, assignor to The Sherwin Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 840,508, July 9, 1969, abandoned. This application Nov. 3, 1971, Ser. No. 195,449

Int. Cl. C07d *39/00*

U.S. Cl. 260—295.5 B 2 Claims

Method for producing isatoic anhydride and 3-azaisatoic anhydride which involves reacting, in an aqueous medium, an alkali or alkaline earth metal base and certain N-halophthalimides or N-haloquinolinimides at temperatures ranging from about 25° (all temperatures herein are in degrees Centigrade) down to the freezing point of the reaction mixture for a time sufficient to enable acidification of the reaction mixture to a pH in the range of about 5.5 to 7.0 within the aforedescribed temperature range without causing souring. After acidification, the reaction mixture is heated to a temperature where exothermic reaction begins and reaction is allowed to proceed while the pH of the reaction mixture is maintained in the range of about 5.5 to 7 until reaction is complete.

3,734,922

CERTAIN 4H-s-TRIAZOLO[4,3-a][1,4] BENZODIAZEPINES

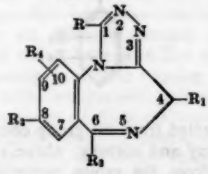
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 11, 1971, Ser. No. 142,419

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 T 2 Claims

This invention relates to novel 4H-s-triazolo[4,3-a]-[1,4]benzodiazepines embraced by the formula



I

wherein R is selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, phenyl, benzyl, nitromethyl, cyanomethyl, lower alkoxymethyl having an alkoxyl moiety of 1 through 3 carbon atoms, lower dialkylaminomethyl having an alkyl moiety of 1 through 3 carbon atoms, lower alkylthiomethyl having an alkyl moiety of 1 through 3 carbon atoms, pyrrolidinomethyl,

wherein R' is lower alkyl of 1 through 3 carbon atoms; R_1 is selected from the group consisting of hydrogen and lower alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of pyridyl, 2-pyrimidyl, furyl, pyrryl, thienyl, lower alkyl of 1 through 3 carbon atoms,

lower alkenyl of 2 through 3 carbon atoms, cycloalkyl of 5 through 7 carbon atoms and cycloalkenyl of 5 through 7 carbon atoms; R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, halogen, nitro, trifluoromethyl and lower alkoxy, lower alkylthio and lower dialkylamino wherein their lower alkyl moieties are of from 1 through 3 carbon atoms; and pharmacologically acceptable acid addition salts thereof. The new products of Formula I are useful as sedatives, hynotics, tranquilizers, muscle relaxants and anticonvulsants in mammals and birds. Also, as feed additives for increasing growth rate and feed efficiency of livestock.

3,734,923

THIAZOLE DERIVATIVES

John Dowding, Burnham-on-Crouch, and William George Leeds, London, England, assignors to May & Baker Limited, Dagenham, Essex, England

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,654

Claims priority, application Great Britain, Aug. 15, 1969, 40,868/69

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R **8 Claims**

The hitherto unknown thiazole derivatives with a urea grouping $—N(R^4)CONR^5R^6$ (wherein R^4 represents a methyl or ethyl group, R^5 represents a hydrogen atom or a methyl group, and R^6 represents a methyl group or, when R^4 and R^5 each represent a methyl group, an ethyl or n-propyl group) in the 2-position of the thiazole nucleus, and a bromine, chlorine or iodine atom in the 5-position, and acid addition salts thereof, are useful as herbicides.

3,734,924

CARBOXAMIDINES

James Whyte Black, Hemel Hempstead, Graham John Durant, Welwyn Garden City, John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,794

Int. Cl. C07d *31/40, 41/18, 49/36, 55/06, 91/32*

U.S. Cl. 260—309 **3 Claims**

N-heterocyclic - alkylcarboxamidines. The compounds inhibit histamine activity.

3,734,925

N-AMINO-3,4-DIMETHYL-6-ISOBUTYL-PHTHALIMIDES

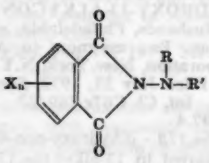
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,710

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 N **5 Claims**

Fungicidal compositions that are suitable for use on living plant materials intended for human or animal consumption contain as their fungicidally-active component a compound having the structural formula



wherein X represents a lower alkyl group, chlorine, phenyl, or nitro; *n* represents an integer in the range of 1 to 4, R represents hydrogen or a lower alkyl group; R′ represents hydrogen, a lower alkyl group, or the group —COOR″; and R″ represents a lower alkyl group.

3,734,926

BENZOPHENONE-3,4,3′,4-TETRACARBOXYLIC ACID DIIMIDES OF 3,5-DIALKYL-4-HYDROXYPHENYLSUBSTITUTED AMINES

Martin Dexter, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,560

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 N **3 Claims**

Benzophenonetetracarboxylic acid diimides of 3,5-dialkyl-4-hydroxyphenylsubstituted amines of this invention effectively stabilize organic materials against the effects of heat and oxygen. The diimides of this invention are prepared by reacting the appropriate 3,5-dialkyl-4-hydroxyphenylsubstituted amine with benzophenone-3,4,3′,4′-tetracarboxylic acid dianhydride or diimide. An example of this class of stabilizers is N,N′-bis(3,5-di-t-butyl-4-hydroxybenzyl)3,4,3′,4′-tetracarboxylic acid-diimide.

3,734,927

NOVEL MALEIMIDE AND AGRICULTURAL FUNGICIDE

Seigo Kawada, Kikukawa-machi, Hideo Ito, Shimizu, Kazuo Matsui, Komae-machi, and Hiroshi Kasugai, Tokyo, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,464

Claims priority, application Japan, Jan. 10, 1970, 45/3,143

Int. Cl. C07d *27/18*

U.S. Cl. 260—326.5 FM **1 Claim**

The novel compound, N-(4-fluorophenyl)-2,3-dichloromaleimide, has been found to possess good fungicidal properties, particularly for such plant diseases as tomato disease, rice blight, anthrax disease in cucumbers and black spot disease in citrus fruit. This compound can be effectively used in lower concentrations compared with previously known fungicidal maleimides.

3,734,928

DIFUNCTIONAL IODONIUM SALTS OF DIPHENYL OXIDE AND PREPARATION

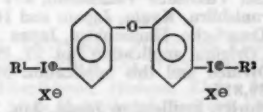
Zdravko Jezic, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,005

Int. Cl. A61k *27/00;* **C07c** *43/28;* **C07d** *63/14*

U.S. Cl. 260—332.2 R **13 Claims**

Difunctional iodonium salts of diphenyl oxide corresponding to the formula



(1)

wherein R^1 and R^2 represent phenyl-, nitrophenyl-, fluorophenyl-, chlorophenyl-, bromophenyl-, loweralkylphenyl-, loweralkoxyphenyl-, trifluoromethylphenyl-, phenylphenyl-, phenokyphenyl-; disubstituted phenyl- in which the substituents are fluoro, chloro, bromo, loweralkyl, lower-

alkoxy; naphthyl; or 2-thienyl; and X represents fluoride, chloride, bromide, iodide, hydrogen sulfate, nitrate, trifluoroacetate, trichloroacetate, loweralkanoate, lactate or tetrafluoroborate. The compounds have antimicrobial properties.

3,734,929

HEXAHYDRO - 3,3,6,6 - TETRAMETHYLFLURO-[3,2-b]-FURAN-2,5-DIONE AND METHOD OF ITS PREPARATION

Alfred G. Robinson, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 45,218, June 10, 1970. This application Aug. 27, 1971, Ser. No. 175,724

Int. Cl. C07d *5/46*

U.S. Cl. 260—343.6 1 Claim

Hexahydro - 3,3,6, - tetramethylfuro-[3,2-b]-furan-2,5-dione is formed by the oxidation of hexahydro-3,3,6,6-tetramethylfuro-[3,2-b]-furan-2,5-diol using hypohalous acid or salts of a hypohalous acid. The reaction may be conducted under atmospheric pressure at temperatures from about 5° C. to about 90° C. The novel compound hexahydro - 3,3,6,6 - tetramethylfuro-[3,2 - b]-furan-2,5-diol is useful as a reactive chemical intermediate which can be used to produce stabilizers for plastics, solvents, plasticizers, synthetic lubricants and polyesters.

3,734,930

DIRECT SYNTHESIS OF (−)-TRANS-Δ TETRAHYDROCANNABINOL FROM OLIVETOL AND (+)-TRANS-Δ -CARENE OXIDE

Raj Kumar Razdan, 76 Lawrence Lane, Belmont, Mass., and G. Richard Handrick, 516 Concord Avenue, Lexington, Mass.

Filed Sept. 22, 1971, Ser. No. 182,841

Int. Cl. C07d *7/24*

U.S. Cl. 260—345.3 7 Claims

A one step stereospecific synthesis of Δ^9-tetrahydrocannabinol by the condensation of olivetol with Δ^3-carene oxide is disclosed.

3,734,931

5'-SUBSTITUTED GRISEOFULVINS

Howard Newman, Monsey, and Thomas Lynn Fields, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of applications Ser. No. 26,404, Apr. 7, 1970, and Ser. No. 824,310, May 13, 1969, now abandoned. This application Nov. 10, 1971, Ser. No. 197,521

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 G 10 Claims

This disclosure describes compounds of the class of 5'-substituted griseofulvins useful as antifungal agents.

3,734,932

1-OXA-8-OXO-2,6,10,10-TETRAMETHYL-SPIRO-[4,5]-DECA-6-ENE

Yajiro Sakato and Kazuo Ina, both of 4300 Mitsuke, Iwata, Japan; Yukitsune Yamamoto, 479 Higashi-cho, Karasumarunishiiru, Kyoto, Japan; and Harumi Morishita, 149 Owari-cho, Hamamatsu, Japan

No Drawing. Original application Jan. 21, 1969, Ser. No. 792,810. Divided and this application May 3, 1971, Ser. No. 139,815

Claims priority, application Japan, Jan. 26, 1968, 43/4,856

Int. Cl. C07d *5/32*

U.S. Cl. 260—347.8 1 Claim

Novel 1-oxa - 8 - oxo-2,6,10,10-tetramethyl-spiro-[4,5]-deca-6-ene; compositions for improving aroma and flavor of black tea which contain the above compound; and black tea containing the above compound.

3,734,933

ARYLTHIOANTHRAQUINONES

Guido R. Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Lock Haven, Pa.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,969

Int. Cl. C09b *1/56*

U.S. Cl. 260—371 4 Claims

A new series of compounds, 1-arylsulfonamido-5(or 8)-arylthioanthraquinones, are provided. 1.5(or 1,8)-dichloroanthraquinone is condensed with an arylsulfonamide to produce an intermediate monochloro-arylsulfonamidoanthraquinone intermediate, which is then converted into the desired final product by condensation with an aromatic mercaptan. The compounds provide bright yellow dyeings of excellent fastness properties on polyester fabrics, and are also useful for the coloration of rigid plastic materials in yellow shades.

3,734,934

DISPERSIBLE α- AND β-SUBSTITUTED ANTHRAQUINONE DYESTUFFS CONTAINING AN -ALKYLENEOCOOR GROUP

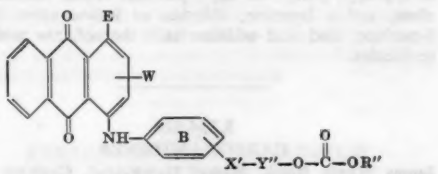
Hans-Peter Kolliker, Munchenstein/Basel-Land; Alfred Staub, Binningen/Basel-Land, and Peter Hindermann, Bottmingen/Basel-Land, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 1, 1970, Ser. No. 24,809

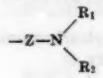
Int. Cl. C09b *1/20, 1/22*; D06p *3/54*

U.S. Cl. 260—376 5 Claims

Dyestuffs of the formula



wherein W is chlorine, bromine, cyano, lower alkyl, lower alkoxy carbonyl, phenoxycarbonyl, lower alkythio, phenylthio, lower alkyl sulfonyl or a grouping of the formula



wherein Z is —CO—or $-SO_2-$ and R_1 and R_2 are each independently hydrogen or lower alkyl,

Y' is lower alkylene, $-CH_2CH_2OCH_2CH_2-$ or $-CH_2CH_2CH_2-OBQCH_2CH_2CH_2-$,

X is a direct bond, —O—, —S—, —NH—, —COHN— or $-SO_2NH-$,

R'' is lower alkyl, cyclohexyl, phenyl or phenyl substituted by chlorine, lower alkyl or lower alkoxy, or bromine,

the nucleus B is either unsubstituted or is further mono-substituted by chlorine, lower alkyl or lower alkoxy,

E is NH_2, OH or NHT, and T is lower alkyl, cyclohexyl, phenyl, lower alkyl phenyl or phenoxyphenyl.

3,734,935

BIOLOGICALLY ACTIVE 17α-ETHYNYL-16,17-DIHYDROXY-13-ALKYGONANES

George E. M. Husbands, Philadelphia, and Reinhardt P. Stein, Audubon, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 21, 1972, Ser. No. 274,004

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.4 1 Claim

13 - alkyl - 16α,17β - dihydroxy-gon-4-ene-3-one compounds are converted to 13-alkyl-16α,17β-dihydroxy-17-

ethynyl gonane and 13-alkyl-16β,17β-dihydroxy gonane compounds having progestational and anti-estrogenic activity.

3,734,936

PROCESS OF PRODUCING A FOUNDRY CORE COMPOSITION

Lloyd H. Brown, Crystal Lake, and Daniel S. P. Eftax, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,485
Int. Cl. C08g 51/04
U.S. Cl. 260—395 B 14 Claims

A foundry core composition which is the product of the process which comprises: (a) forming a monomeric binder mixture of specified amounts of aqueous urea-formaldehyde mixture; furfuryl alcohol; and a silane coupling agent of the general formula:

$$X—R'—Si—(OR'')_3$$

wherein R' is a short chain alkylene radical; R'' is aryl, alkyl, substituted aryl, or furfuryl; and X is amino, mercapto, epoxy, or glycidoxy; (b) forming a mixture of specified amounts of sand and acidic catalyst; and (c) admixing specified amounts of the monomeric binder with specified amounts of the sand-acidic catalyst mixture.

3,734,937

DERIVATIVES OF α-HALO-α-BENZYL PROPIONIC ACID

Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 24, 1970, Ser. No. 49,540
Claims priority, application Canada, Mar. 25, 1970, 78,424
Int. Cl. C09b 11/04
U.S. Cl. 260—395 1 Claim

A new method of preparing L-α-hydrazino-β-phenylalkanoic acids and their derivatives by direct hydrazino displacement of a corresponding α-substituted-β-phenylalkanoic acid or derivative is disclosed. The preparation of the novel intermediate compounds is also described.

3,734,938

NOVEL PROCESS FOR 3β,17β-DIHYDROXY-5-ANDROSTENE-17α-PROPYNOIC ACID

Francisc Petru Hodosan, Nicolae Serban, Arpad Balogh, Ioan Jude, Ottmar Carol Mantsch, and Nicolae Stefan Bodor, Cluj, Rumania, assignors to Institutul de Chimie Cluj, Cluj, Rumania

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,442
Claims priority, application Rumania, Aug. 5, 1970, 64,146/70
Int. Cl. C07c 169/24
U.S. Cl. 260—397.1 2 Claims

A process for preparing 3β,17β-dihydroxy-5-androstene-17α-propynoic acid in a one-step synthesis characterized in that 3β-hydroxy-5-androsten-17-one is condensed with propiolic acid in alcohol solution in the presence of an alkaline hydroxide. The condensation product is then isolated as the ammonium salt. The yield is about 70%.

3,734,939

N,N-DIALLYLGUANIDINE SALTS

Frederic Charles Schaefer, Darien, and Alan Carl Wright, Willimantic, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,406
Int. Cl. C11c 3/00
U.S. Cl. 260—404.5 5 Claims

1,1-diallylguanidine and its salts are prepared by reaction of diallylamine with cyanamide or by reaction of diallylcyanamide with ammonium chloride, and are useful as biocides and for the formation of wet and dry strength agents for paper when copolymerized with acrylamide and reacted with glyoxal.

3,734,940

CHELATES OF HYDROXY CARBOXYLIC ACIDS AND METHODS FOR PREPARING THE SAME

Andrew M. Rubino, Caldwell, N.J., assignor to Armours Pharmaceutical Company, Berkeley Heights, N.J.

No Drawing. Division of application Ser. No. 544,833, Apr. 25, 1966, now Patent No. 3,553,316, dated Jan. 5, 1971, which is a continuation-in-part of applications Ser. No. 668,886, July 1, 1957, Ser. No. 236,168, Nov. 7, 1962, and Ser. No. 255,218, Jan. 31, 1963, all now abandoned. This application Mar. 30, 1970, Ser. No. 29,716
Int. Cl. C07f 5/06
U.S. Cl. 260—448 B 9 Claims

Aluminum chelates are prepared by reacting an aluminum compound selected from the group consisting of alkali metal aluminates and aluminum chlorhydroxy complexes with water and alcohol soluble hydroxy carboxylic acids until no precipitation of aluminum is obtained when a sample of the aqueous reaction solution is heated with an ionic precipitant for aluminum. If necessary, the pH of the reaction solution is adjusted to a range of about 4–9 with an alkali.

3,734,941

PROCESS FOR CONVERTING URETHANES TO ISOCYANATES

Walter Joseph Sydor, Raritan, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,138
Int. Cl. C07c 119/04
U.S. Cl. 260—453 P 4 Claims

A process for producing isocyanates from urethanes which comprises heating a urethane of the formula:

$$R(NHCOOR')_x$$

wherein R is alkyl of from 1 to 18 carbon atoms, aryl or alkaryl containing less than 3 rings, R' is alkyl of 1 to 6 carbon atoms, aryl or alkaryl of less than three rings, and x is 1, 2 or 3, at a temperature between 400° C. and 600° C. in the presence of a Lewis acid to form vapors and condensing the vapors to recover an organic isocyanate.

3,734,942

PREPARATION OF NITRILES

William E. Dennis, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,025
Int. Cl. C07c 121/02
U.S. Cl. 260—465 B 4 Claims

Nitriles are prepared by reacting amides or aldoximes with cyclic diorganosilazanes. For example, benzamide was reacted with hexa-methylcyclotrisilazane at 130° C. to give a 94% yield of benzonitrile.

3,734,943

DEEP WELL DISPOSAL PROCESS FOR ACRYLONITRILE PROCESS WASTE WATER

William O. Fitzgibbons, Hudson, Elaine M. Schwerko, Solon, and Allan H. Brainard, Bedford, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 6, 1971, Ser. No. 140,782
Int. Cl. C07c 121/32
U.S. Cl. 260—465.3 4 Claims

A process for the deep well disposal of a waste water stream resulting from a catalytic ammoxidation process

for the production of acrylonitrile comprises adding minor amounts of acrolein or a mixture of acrolein and ammonium sulfate to the waste water stream prior to pumping the stream into the well.

3,734,944
GLYCYRRHETINIC ACID ESTERS
John Cameron Turner, Kent, England, assignor to Biorex Laboratories Limited, London, England
No Drawing. Filed May 15, 1970, Ser. No. 37,924
Int. Cl. C07c *69/36, 69/74*
U.S. Cl. 260—468.5 16 Claims

New derivatives of glycyrrhetinic acid are obtained by the esterification of glycyrrhetinic acid with unsaturated alcohols. The new compounds have valuable anti-inflammatory properties.

3,734,945
CYCLOALKYL CARBAMATES
Richard W. Fraley, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed May 28, 1971, Ser. No. 148,175
Int. Cl. C07c *125/06*
U.S. Cl. 260—468 E 6 Claims

The soil lives of many herbicides may be extended combining them with various O-phenylcarbamates having one group attached to the carbamic nitrogen atom. An exemplary composition is a mixture of isopropyl N-(3-chlorophenyl)carbamate and 4-chlorophenyl N-cyclohexylcarbamate.

3,734,946
SERINE DERIVATIVES
Miguel A. Ondetti, North Brunswick, Josip Pluscec, East Brunswick, and John T. Sheehan, Middlesex, N.J., and Johan E. Jorpes, Stockholm, and Viktor Mutt, Farsta, Sweden, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Original application May 3, 1968, Ser. No. 726,558. Divided and this application Dec. 23, 1969, Ser. No. 889,769
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 2 Claims

Novel peptide amides of the general formula

R—Met—Gly—Trp—Met—Asp—Phe—NH_2

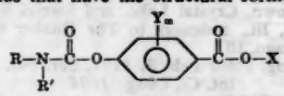
wherein R represents L-aspartyl-O-sulfate-L-tyrosyl, L-aspartyl-L-arginyl-L-aspartyl-O-sulfate-L-tyrosyl, or isoleucyl-L-ceryl-L-aspartyl-L-arginyl-L-aspartyl - O-sulfate-L-tyrosyl, and intermediates in the production thereof. The peptide amides of this invention as well as the pharmaceutically acceptable salts thereof have been found to possess cholecystokinin activity.

3,734,947
PROCESS FOR THE PRODUCTION OF 4-(2-HYDROXYETHOXY) BENZOIC ACID LOWER ALKYL ESTERS OF HIGH PURITY
Ryuzo Ueno and Motomu Kashihara, Nishinomiya, Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan
No Drawing. Filed July 23, 1970, Ser. No. 57,768
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 R 3 Claims

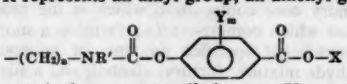
A process for producing 4-(2-hydroxyethoxy) benzoic acid lower alkyl esters which comprises dissolving or suspending a mixture of an alkali metal salt of a 4-hydroxy benzoic acid lower alkyl ester, where the lower alkyl is of not more than 6 carbon atoms, and a 4-hydroxy benzoic acid lower alkyl ester, in an inert organic solvent, and contacting the resulting solution or suspension with ethylene oxide.

3,734,948
CARBAMATES OF p-HYDROXYBENZOATES
Henri Sidi, Paramus, N.J., assignor to Tenneco Chemicals, Inc.
No Drawing. Filed Feb. 18, 1971, Ser. No. 116,607
Int. Cl. C07c *125/06*
U.S. Cl. 260—473 R 6 Claims

Compounds that have the structural formula



wherein R represents an alkyl group, an alkenyl group, or



R′ represents hydrogen or an alkyl group; X represents an alkyl group, $—(CH_2)_n—OH$, or $—(CH_2)_n—OCONRR'$; Y represents an alkyl group or an alkoxy group; *m* represents an integer in the range of 0 to 2; and *n* represents an integer in the range of 2 to 6 are used to protect surface-coating compositions from deterioration resulting from attack by fungi and other microorganisms. Illustrative of these carbamates are ethylene glycol mono-p-hydroxybenzoate N-methyl carbamate and ethyl 3-methoxy-4-hydroxybenzoate N-methyl carbamate.

3,734,949
CARBAMATES OF NORBORNANES
Harvey E. Alburn, West Chester, and William Dvonch, Radnor, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 644,089, June 7, 1967. This application June 3, 1970, Ser. No. 43,207
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 B 2 Claims

Carbamic acid esters of 2-norbornanol, 5-norbornene-2,3-dimethanol, and related compounds exhibit antiviral activity.

3,734,950
PRODUCTION OF 3-ACETOXY-2-METHYLENE PROPIONIC ACID ALKYL ESTERS
Gerhard Scharfe, Leverkusen; Wolfgang Swodenk, Odenthal-Globusch; Johann Grolig, Leverkusen, and Manfred Martin, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 29, 1970, Ser. No. 59,357
Claims priority, application Germany, Aug. 1, 1969, P 19 39 143.6
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 A 7 Claims

A process for the production of 3-acetoxy-2-methylene propionic acid alkyl esters, wherein methacrylic acid alkyl ester, oxygen and acetic acid are reacted in the gas phase at a temperature of from about 50 to 250°C in the presence of a palladium catalyst containing an alkali metal acetate. The catalyst may contain additions of one or more metals or compounds of metals selected from the group consisting of gold, copper and metals of the fifth to eighth Groups of the Periodic System.

3,734,951
CONTINUOUS PRODUCTION OF NEUTRAL ADIPIC ESTERS
Hubert Suter, Juergen Jahn, Franz Janka, and Friedrich Brunnmueller, Ludwigshafen, and Otto Bernd Claren, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,169
Int. Cl. C07c *69/44*
U.S. Cl. 260—485 R 1 Claim

Continuous production of neutral esters of adipic acid and an alcohol in which solid adipic acid is mixed with

alcohol in the molar ratio 1:2 in a mixing zone at from 120° to 180° and the mixture is esterified while boiling the alcohol and setting up the stoichiometric amount of alcohol in the liquid at from 180° to 250°.

3,734,952

PREPARATION OF L-DOPA

Alan Martin Krubiner, Montville, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,563
Int. Cl. C07c *101/08*
U.S. Cl. 260—501.11 5 Claims

The present invention relates to a process for the preparation of L-dopa and to an aryl lower alkylamine resolving agent usable in this preparation.

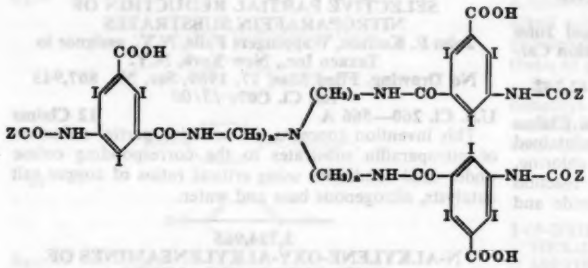
3,734,953

TRIS-TRIIODOISOPHTHALAMIC ACIDS AND DERIVATIVES

Jack Bernstein and Kathryn Losee, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,175
Int. Cl. C07c *103/30*
U.S. Cl. 260—501.11 8 Claims

This invention relates to new tris-triiodoisophthalamic acid compounds having the formula



wherein Z is an alkyl chain of up to 6 carbon atoms, or a radical of the formula

wherein R′ is an alkyl chain of up to 6 carbon atoms, and R″ is hydrogen or an alkyl chain of up to 6 carbon atoms, *n* is an integer from 2 to 4, and to salts and lower alkyl esters of these compounds. These compounds are useful as radiopaque agents.

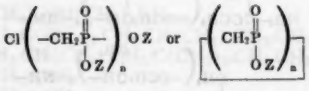
3,734,954

POLYPHOSPHINIC ACIDS AND SALTS THEREOF

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1969, Ser. No. 850,623
Int. Cl. C07f *9/30, 9/32*
U.S. Cl. 260—502.4 P 3 Claims

Polyphosphinic acids and salts thereof of the general formulas



wherein Z is hydrogen, a metal, ammonium or substituted ammonium and *n* is an integer of at least 2. The polyphosphinic acids are useful as complex-forming agents and sequestering agents. The polyphosphinic acid salts are useful as stabilizers for peroxide solutions and active chlorine compounds.

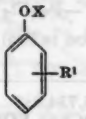
3,734,955

CARBOXYLATION OF INDENE

Edwin L. Patmore, Fishkill, and William R. Siegart and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application Jan. 27, 1969, Ser. No. 794,344, now Patent No. 3,658,874. Divided and this application Nov. 10, 1971, Ser. No. 197,531
Int. Cl. C07c *51/14*
U.S. Cl. 260—515 R 5 Claims

Method of carboxylating an organic compound of the group of $RC{\equiv}CH$, RCH_2CN, indene or cyclopentadiene where R is hydrocarbyl comprising contacting under anhydrous conditions in an inert atmosphere and in the presence of an inert, aprotic, dipolar, liquid solvent, said compound with a carbonated metal phenoxide, the metal phenoxide of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl, and subsequently acidifying the resultant intermediate product to form the carboxylated product.

3,734,956

PROCESS FOR THE PREPARATION OF DIPHENIC ACID AND 2-PHENYL BENZOIC ACID

John Martin Nilsson, Solna, and Jadwiga Palicka, Lidingo, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,981
Int. Cl. C07c *63/00*
U.S. Cl. 260—515 P 2 Claims

Diphenic acid and 2-phenyl benzoic acid may be prepared according to the invention by heating copper (I)-phthalate in a solvent, such as quinoline, at a temperature of 110–200° C.

3,734,957

METHOD FOR THE PRODUCTION OF α,α-DIALKYL-β-CHLOROPROPIONIC ACIDS

Moustafa El-Shahawi, Kenntemich-Platz, and Hermann Richtzenhain, Post Marlalinden, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,038
Claims priority, application Germany, Apr. 1, 1969, P 19 16 684.8
Int. Cl. C07c *53/32*
U.S. Cl. 260—539 R 4 Claims

A method for the production of β-chloropropionic acids disubstituted in α-position by alkyl residues having 1 to 4 C-atoms, by treating β-hydroxypropionaldehyde or its acetals disubstituted in α-position by alkyl residues having 1 t o 4 C-atoms with chlorine in the presence of

water or aqueous hydrochloric acid, and heating the resulting reaction mixture to temperatures between 100 and 200° C.

3,734,958
PROCESS FOR THE PREPARATION OF DIORGANOCHLOROPHINES
Andre Rio, Lyon, Rhone, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,724
Claims priority, application France, Sept. 9, 1968, 165,535
Int. Cl. C07f *9/52*
U.S. Cl. 260—543 P **6 Claims**

Diorganochlorophosphines of the formula:

$$R_2—P—Cl$$

wherein R is a hydrocarbon radical are prepared by heating white phosphorus with a compound of the formula R—Cl in the presence of a compound of the formula

$$R'—P—Cl_2$$

where R' is a hydrocarbon radical and may be the same as or different from R.

3,734,959
CATALYTIC PROCESS FOR PRODUCING PHTHALOYL CHLORIDES
Charles Frank Hauser, Charleston, W. Va., and John Wendell Lynn, Westfield, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Apr. 7, 1972, Ser. No. 242,242
Int. Cl. C07c *63/24, 63/30*
U.S. Cl. 260—544 M **6 Claims**

The catalytic activity of ferric chloride is maintained or restored by the addition of an oxidant such as chlorine, ammonium persulfate or peracetic acid to the reaction mixture of phthaloyl chloride, carbon tetrachloride and catalyst.

3,734,960
SYNTHESIS OF ORGANIC SULFONYL CYANIDES
R. Garth Pews and Fred P. Corson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 4, 1969, Ser. No. 847,455
Int. Cl. C07c *161/00*
U.S. Cl. 260—545 R **4 Claims**

Organic thiocyanates are reacted under essentially anhydrous conditions in the liquid phase with an organic peracid oxidizing agent to produce the corresponding sulfonyl cyanide.

3,734,961
HERBICIDAL FLUORINATED PHENYL UREAS AND THIOUREAS
John E. Englehart, Westfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed June 25, 1969, Ser. No. 836,666
Int. Cl. C07c *127/16*
U.S. Cl. 260—553 A **2 Claims**

Phenyl ureas and phenyl thioureas containing from 2 to 5 fluorine atoms on the phenyl ring are active pesticides, particularly as herbicides, both pre- and post-emergent.

3,734,962
PROCESS FOR THE PREPARATION OF HYDROXY-ALKYL-PERFLUOROALKANE SULFONAMIDES
Hans Niederprüm, Monheim, Rhineland, and Peter Voss, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 13, 1971, Ser. No. 143,238
Claims priority, application Germany, May 22, 1970, P 20 24 909.6
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F **3 Claims**

Preparation of N-hydroxyalkyl perfluoroalkane sulfonamides by reacting the corresponding N-unsubstituted sulfonamides with a cyclic carbonate or sulfite at a temperature of about 50 to 250° C. in the presence of an inorganic or organic base.

3,734,963
INORGANIC LITHIUM-AMINE COMPLEXES
Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Linden, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,328
Int. Cl. C07c *87/14, 87/20, 87/38*
U.S. Cl. 260—563 R **11 Claims**

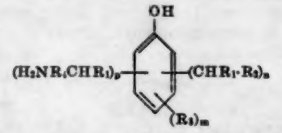
Complexed inorganic lithium salts are prepared by mixing an inorganic lithium salt such as a lithium halide with a monomeric or polymeric organic complexing agent which contains at least one nitrogen atom and at least one other atom which is nitrogen, oxygen, phosphorus or sulfur. The complexing agent may be nonchelating (e.g. triethylenediamine) or chelating in nature. The chelating complexing agents (e.g. triamines such as pentamethyl diethylenetriamine) are preferred. The resultant complex is useful for a variety of processes such as separations, catalytic reactions, substitution reactions, electrochemical reactions, etc. and as oil and fuel additives.

3,734,964
SELECTIVE PARTIAL REDUCTION OF NITROPARAFFIN SUBSTRATES
John F. Knifton, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Mar. 17, 1969, Ser. No. 807,943
Int. Cl. C07c *13/00*
U.S. Cl. 260—566 A **12 Claims**

This invention concerns the selective partial reduction of nitroparaffin substrates to the corresponding oxime under mild conditions using critical ratios of copper salt catalysts, nitrogenous base and water.

3,734,965
N-ALKYLENE-OXY-ALKYLENEAMINES OF HYDROXYBENZYLAMINES
Wilhelm Becker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,620
Claims priority, application Switzerland, Nov. 13, 1968, 17,157/68
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.5 P **5 Claims**

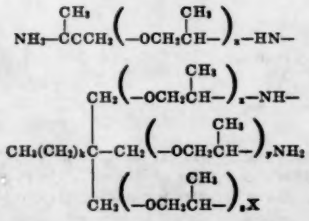
A phenolic resin having a polyoxypropyleneamine substituent wherein the resin has the general formula:

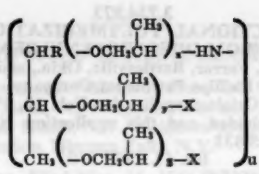


wherein

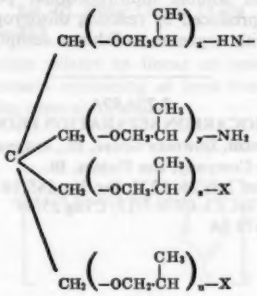
R_1=H—, CH_3—, C_2H_5—, C_3H_7—, C_4H_9— or

R_2=

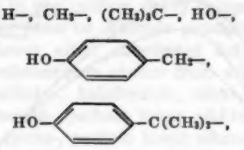




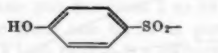
or



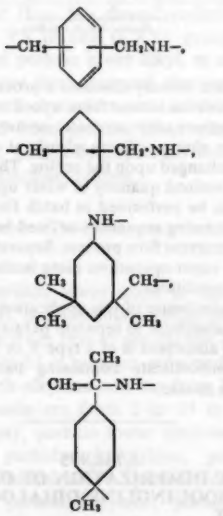
R_3=



or



R_4=



—$(CH_2)_3NH(CH_2)_3NH$—,
—$CH_2.C(CH_3)_2.CH_2.CH(CH_3).CH_2.CH_2.NH$—,
—$CH_2CH(CH_3).CH_2.C(CH_3)_2.CH_2.CH_2.NH$—,
—$(CH_2)_2NH$—,
—$(CH_2)_3NH$—,
—$(CH_2)_4NH$—,
—$(CH_2)_5NH$—,
—$(CH_2)_6NH$—,
—(CH_2CH_2NH)—,
—$(CH_2CH_2NH)_2$—,
—$(CH_2CH_2NH)_3$—, or
—$(CH_2CH_2NH)_4$—;

R=—H or —CH_3;
X=—NH_2 or —OH;
n and m=integers from 1 to 3;
x, y and z=1 to 50;
k and u=0 to 4; and
p=0 or an integer from 1 to 2.

3,734,966

HYDROFLUORENE DICARBOXYLIC ACID DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Akira Tahara, Asaka, Yasuo Ohtsuka and Tadashi Nakata, Tokyo, and Shoichi Takada, Kawaguchi, Japan, assignors to Rikagaku Kenkyusho, Saitama-ken, Japan

No Drawing. Filed June 25, 1971, Ser. No. 157,021
Claims priority, application Japan, June 30, 1970, 45/57,191; Oct. 2, 1970, 45/86,532; Nov. 28, 1970, 45/105,138; Mar. 29, 1971, 46/18,621; Mar. 29, 1971, 46/18,622
Int. Cl. C07c *63/48*
U.S. Cl. 260—515 P **8 Claims**

Novel chemical compound of 4β,10α - dimethyl - 1,2,3,4,5β,10-hexahydrofluorene - 4α,6α - dicarboxylic acid and alkali salts thereof which are useful as a new synthetic sweetening agent and a potential intermediate in the synthesis of gibberellin A_{12} or its related substances.

Said compounds can be synthesized via 4β,10α-dimethyl-1,2,3,4,5α,10-hexahydro - 6β - hydroxyfluoroene-4α,6α-dicarboxylic acid dervied from disproportionated rosin containing dehydroabietic acid.

3,734,967

1-(4-OXOPENT - 1 - ENYL)-1,3-DIMETHYLCYCLOHEX-2-ENE, 1-(4 - OXOPENT - 1 - ENYL)-1,3-DIMETHYLCYCLOHEX - 3 - ENE AND THEIR METHYL HOMOLOGS

Werner Hoffmann, Heinrich Pasedach, and Horst Pommer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 29, 1969, Ser. No. 829,113
Claims priority, application Germany, June 1, 1968, P 17 68 596.0
Int. Cl. C07c *49/48*
U.S. Cl. 260—586 R **9 Claims**

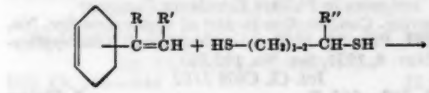
1-(4-oxopent-1-enyl)-1,3-dimethylcyclohex-2-ene, 1-(4-oxopent-1-enyl)-1,3-dimethylcyclohex - 3 - ene and their methyl homologs and a process for the production of these compounds in which formic acid is allowed to act on a 6,10-dimethylundeca-3,5,10-trien-2-one.

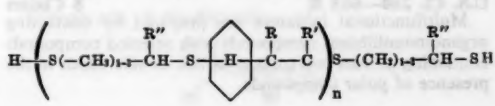
3,734,968

CYCLOHEXYL THIOL-DIENES

Richard A. Hickner, Midland, and Edward W. Goss, Auburn, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,022
Int. Cl. C07c *149/26*
U.S. Cl. 260—609 D **2 Claims**





wherein n is 1–5, one of R and R' is hydrogen and the other is hydrogen or methyl, and R'' is hydrogen or methyl; with the average molecular weight of product not above about 700; illustratively, ethanedithiol reacts with 4-vinylcyclohexene to yield a product in which on average $1<n<3$. The products are liquids of low viscosity adapted to be used as curing agents for various plastics including epoxy resins.

3,734,969

MANUFACTURE OF THIOPHENOL

Harold M. Pitt, Lafayette, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 750,314, Aug. 5, 1968. This application June 11, 1969, Ser. No. 834,232

Int. Cl. C07c *149/32*

U.S. Cl. 260—609 D 6 Claims

A process for producing thiophenols is described herein. The process involves reacting aromatic sulfonic acid and elemental phosphorus in the presence of the catalyst in the first reaction zone. Thereafter the reaction product is transferred to a second zone wherein water is added thereto to maintain the composition of the aqueous phase at between about 86–96% H_3PO_4. The thiophenol is then separated from the aqueous phase containing phosphoric acid.

3,734,970

PREPARATION OF METHYL-β-PHENYL-ETHYL-ETHER

Yogesh Chand Chaturvedi, Lashkar, India (Government College of Science, Raipur, Madhya Pradesh, India)

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,225

Int. Cl. C07c *41/04*

U.S. Cl. 260—611 A 3 Claims

Methyl-β-phenyl-ethyl-ether is prepared by treating aluminium-β-phenyl-ethoxide with dimethylsulphate at water bath temperature. The unreacted dimethyl sulphate is destroyed by boiling with caustic soda solution and the lighter layer containing methyl-β-phenyl-ether is separated by fractionation. The aluminium-β-phenyl-ethoxide is prepared by treating β-phenyl-ethyl-alcohol with Al/Hg couple in the presence of carbon tetrachloride.

3,734,971

DIBENZO [A,E] CYCLOPROPA [C] CYCLOHEPTENE DERIVATIVES

John W. Cusic, Skokie, Ill., and William E. Coyne, St. Paul, Minn., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 733,261, May 31, 1968, Pat. No. 3,658,908. This application Dec. 27, 1971, Ser. No. 212,384

Int. Cl. C07c *35/44*

U.S. Cl. 260—618 F 3 Claims

Tetrahydrodibenzo[a,e]cyclopropa[c]cycloheptene 5-ketones and 5-alcohols are described herein. They are prepared by starting from 5H-dibenzo[a,e]cyclohepten-5-one and ethyl trichloroacetate and are themselves useful as intermediates in the preparation of other compounds which possess pharmacological activity such as diuretic activity or antidepressant activity.

3,734,972

MULTIFUNCTIONAL INITIATORS

Floyd E. Naylor and Ralph C. Farrar, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 800,271, Feb. 18, 1969, now abandoned. This application Nov. 4, 1971, Ser. No. 195,863

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R 8 Claims

Multifunctional initiators are prepared by contacting organomonolithium compounds with selected compounds containing at least two carbon-carbon double bonds in the presence of polar compounds.

3,734,973

MULTIFUNCTIONAL POLYMERIZATION INITIATORS FROM DIISOPROPENYLBENZENE

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Feb. 10, 1969, Ser. No. 798,128. Divided and this application Nov. 4, 1971, Ser. No. 195,832

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R 15 Claims

Hydrocarbon soluble multifunctional polymerization initiators are produced by reacting diisopropenylbenzene compounds with organomonolithium compounds.

3,734,974

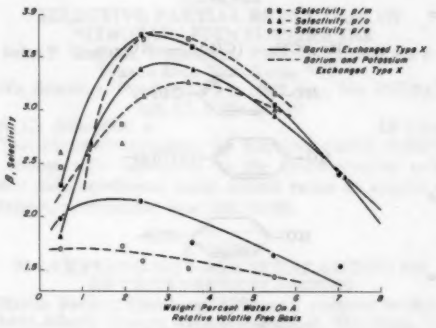
HYDROCARBON SEPARATION PROCESS

Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 26, 1971, Ser. No. 165,101

Int. Cl. C07c *7/12*; C10g *25/04*

U.S. Cl. 260—674 SA 8 Claims



This application broadly discloses a process for the separation of para-aromatics isomer from a feed mixture containing para- and at least one other aromatic isomer. The process utilizes a crystalline aluminosilicate adsorbent containing barium cations base-exchanged upon the zeolite. The zeolite also contains a pre-determined quantity of water upon the adsorbent. The process can be performed in batch fixed-bed processes, moving bed processing sequences or fixed-bed simulated moving bed countercurrent flow process. Separation takes place in either liquid or vapor operations using isothermal, isobaric or both operating conditions.

The specific disclosure of this application relates to the use of a particular adsorbent to separate para-xylene from xylene mixtures which adsorbent is of a type X or type Y crystalline structured aluminosilicate containing barium cations and water within the zeolite.

3,734,975

CATALYTIC DIMERIZATION OF OLEFINS WITH A BIS(ISOQUINOLINE)DIHALOCOBALT (II) COMPLEX

Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company

No Drawing. Original application June 18, 1970, Ser. No. 47,633, now Patent No. 3,686,353. Divided and this application May 25, 1972, Ser. No. 257,054

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 4 Claims

A catalytic process for the dimerization of olefins utilizing a cobalt(II) complex activated by the presence of an alkylaluminum halide.

3,734,976

HALOGENATED TRIAZINE ELASTOMERS

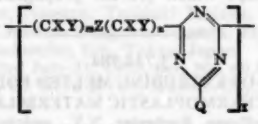
Edwin Dorfman and William E. Emerson, Grand Island, Claude T. Bean, Jr., Niagara Falls, and Russell L. K. Carr, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 11, 1966, Ser. No. 533,430

Int. Cl. C08g *33/06, 33/04*

U.S. Cl. 260—823 42 Claims

This invention relates to linear or essentially linear triazine elastomers containing at least one triazine ring of the following general formula:



where *x* is one to one million, the Q halogenated organic radicals are the same or different pendant groups comprising halo lower alkyl, substituted halo lower alkyl where the substituents are chosen from alkoxycarbonyl-, carbamoyl- carboxy-, haloformyl-, nitro-, nitroso-, dialkoxy phosphonate-, perhalo lower alkoxy-, aryl-, halogenated aryl-, cyano-, perhalo lower alkene, and perhalo lower alkyne, perfluoro lower alkyl polyoxyalkylene where each alkylene unit has from 2 to 10 carbon atoms and the units are from one to 35 in number, and the $-(CXY)_mZ(CXY)_n-$ radical is a difunctional polyhalo organic radical in which the X's in any (CXY) group are halogens selected from the group consisting of chloro- and fluoro-, the Y's in any (CXY) group are selected from halogen and perhalo lower alkyl, *m* and *n* are positive integers greater than zero and the sum of *m* plus *n* plus the number of equivalent units in Z is at least four and Z is selected from perhalo lower alkylene, perhalo lower alkylidene, omega-hydroperhalo lower alkylidene, keto, oxy, thio, sulfoxide, sulfone,

wherein R is perhalo lower alkyl or omega-hydroperfluoro lower alkyl, poly-perfluorooxyalkylene where each alkylene unit has from two to ten carbon atoms and the units are from 2 to 35 in number, poly(perfluoroalkylenedioxy) where each alkylene unit has from 2 to 10 carbon atoms and the units are from 2 to 35 in number, perfluoroalkylenedioxy, perhalo lower alkyl-amino, perhalocyclopentylene, perhalocyclohexylene, perhalopyridinediyl, perhalopyrazolidinediyl, perhalopyranylene, perhlopiperidylene, perhalophenylene, perhalonaphthalenediyl, perhalodecalinylene, oxadiazolylene, triazolylene, triazinylene and aryl perhalo lower alkylene wherein substituents on the said aryl group are selected from hydrogen, lower alkenyl, chloro, fluoro, lower alkoxy, nitro, nitroso, cyano, and alkoxy carbonyl, and mixtures thereof. The triazine polymers are useful as sealants, resins, electrical insulations, damping materials, viscosity modifiers of fluids for use at high temperature, greases, lubricants, hydraulic fluids, and the like.

3,734,977

WATER-SOLUBLE CATIONIC THERMOSETTING ACRYLAMIDE-GRAFTED GLYOXALATED ALKYLAMINE-EPICHLOROHYDRIN WET STRENGTH RESIN AND PAPER CONTAINING THE SAME

Anthony Thomas Coscia, Norwalk, and Laurence Lyman Williams, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of applications Ser. No. 471,463, July 12, 1965, now abandoned, and Ser. No. 745,486, July 17, 1968, now Patent No. 3,556,932. This application Jan. 18, 1971, Ser. No. 107,458

Int. Cl. C08g *33/06*

U.S. Cl. 260—874 5 Claims

Water-soluble lower alkylamine-epichlorohydrin polymers which have been grafted with at least ½ mol of acrylamide per polymer linkage and then glyoxalated are cationic thermosetting wet strength resins. Paper having a thermoset content thereof loses about half of its wet strength in 24 hours on normal wet weathering.

3,734,978

BLOCKING POLYSTYRENE PRODUCED BY ANIONIC SLURRY POLYMERIZATION

Frederick C. Schwab, Metuchen, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed May 12, 1971, Ser. No. 142,774

Int. Cl. C08f *19/00*

U.S. Cl. 260—878 B 8 Claims

There is provided a blocking process for polystyrene in which a styrene monomer is initially polymerized slurried in a paraffinic or monoolefin slurrying medium, using an anionic initiator and a styrene-alkylstyrene block polymer dispersant, a divinyl-benzene modifying agent is added anionically to modify the polystyrene, and the modified polystyrene is blocking with a monomer polymerizable with a free radical initiator, a Ziegler-Natta coordination catalyst, or a cationic initiator.

3,734,979

SHAPED AND MOLDED ARTICLES OF POLYMER BLENDS COMPRISING POLYOLEFINS AND LACTONE POLYMER

Joseph Victor Koleske and Earl Richard Walter, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 812,427, Apr. 1, 1969. This application Dec. 30, 1970, Ser. No. 102,921

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 R 18 Claims

Molded and shaped articles comprising solid olefin polymers, particularly crystalline alkenes, and solid cyclic ester polymers such as fibers, films, wire and cable coatings, and the like which exhibit or possess improved dyeability, stress crack resistance, low haze, and high gloss, and/or high light transmission.

3,734,980

PHOSPHORUS CONTAINING AMIDINES

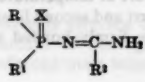
Ferenc M. Pallos, Pleasant Hill, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,263

Int. Cl. A01n *9/36;* C07f *9/24*

U.S. Cl. 260—944 12 Claims

Compounds of the formula:



in which R is lower alkyl or lower alkoxy; R^1 is lower alkoxy or lower alkylthio; R^2 is hydrogen, lower alkyl, phenyl; mono or di-substituted phenyl; and X is oxygen when R^1 is lower alkylthio and sulfur when R^1 is lower alkoxy as insecticides and acaricides, and a process for preparing the compounds above having X be oxygen.

3,734,981

BIS-METHYLENE-AMIDES OF PHOSPHOR OR PHOSPHONIC ACIDS AND THEIR THIO-DERIVATIVES

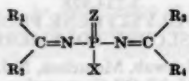
Klaus Hunger, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Feb. 4, 1969, Ser. No. 796,581. Divided and this application Mar. 18, 1971, Ser. No. 125,886

Int. Cl. C07f 9/24; C10m 1/48

U.S. Cl. 260—959 **4 Claims**

Compounds having utility as lubricant additives having antioxident and thermal-stabilizing properties, of the formula



wherein R_1–R_4, taken alone are the same or different and are alkyl, cyclohexyl, phenyl, halo phenyl or alkylphenyl; or R_1 and R_2 taken together, or R_3 and R_4 taken together are alkylene; X is alkyl, cyclohexyl, phenyl or alkyl phenyl bound directly to carbon or by way of an oxygen or sulfur atom; and Z is oxygen or sulfur.

3,734,982

PROCESS FOR CASE BONDING CAST COMPOSITE PROPELLANT GRAINS

Henry T. Sampson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1962, Ser. No. 170,849

Int. Cl. C06b 21/02

U.S. Cl. 264—3 R **1 Claim**

1. The method of bonding composite propellant grains to rocket motor tubes which comprises

a. coating the inside of the tube with a formulation consisting essentially of

60 percent by weight castor oil and

31 percent by weight 2,4-toluene diisocyanate to form a first liner,

b. applying to said first liner before curing a second liner consisting of a silicon tape composed of glass cloth impregnated with a composition consisting essentially of

1. a benzene soluble resin polymer composed essentially of structural units of SiO_2 and $R_3SiO_{1/2}$ where R is a monovalent hydrocarbon selected from the group consisting of alkyl radicals of less than four carbon atoms and phenyl and at least 90 percent of the total number of R radicals are alkyl and in said copolymer the ratio of $R_3SiO_{1/2}$ units is between 0.6 to 0.9 inclusive, and

2. a benzene soluble organosiloxane of at least 1 million centistokes viscosity at 25° C., said organosiloxane having the general formula R'_2SiO wherein R' is a monovalent hydrocarbon radical selected from the group consisting of methyl and phenyl and at least 90 percent of the total number of R' radicals are methyl.

c. casting a composite propellant composition into said tube, and

d. curing up to 4 hours at temperatures ranging up to 200° F.; whereby the first and second liners and the propellant grain together are firmly bonded to the inside of the motor tube.

3,734,983

CONTINUOUS MELT-POUR PROCESS FOR HIGH EXPLOSIVES

Irving Forsten, West Orange, Louis Jablansky, Fair Lawn, Colin B. Piper, Sparta, and John J. Canavan, Mine Hill, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed Aug. 23, 1971, Ser. No. 174,078

Int. Cl. C06b 21/02

U.S. Cl. 264—3 C **5 Claims**

Method and apparatus are provided for a novel continuous, automated melt-pour process for high explosives, such as TNT, wherein flaked high explosive is continuously introduced into a vessel containing an agitated pool of the molten explosive and providing a high ratio of heating surface to volume of explosive and the molten explosive is continuously pumped to a remote shell loading station through a heated pipe system provided with detonation traps which prevent propagation of an explosion.

3,734,984

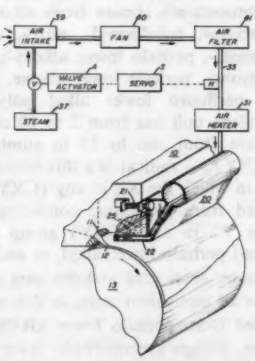
PROCESS OF EXTRUDING MELTED POLYMERIC THERMOPLASTIC MATERIALS

Edward P. Hoffman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1971, Ser. No. 140,087

Int. Cl. B29d 7/02

U.S. Cl. 264—40 **11 Claims**



A molten polymeric plastic such as a sheet of poly(ethylene terephthalate) is extruded under pressure through an orifice while impinging a blast of clean hot air or other gas against the extruded product at the instant it leaves the orifice. Water vapor is introduced into the gas, as by steam injection or water sprays, so as to maintain its humidity at a level corresponding to a dew point of at least 35°F., and preferably 50°–80°F. When casting a sheet of film onto a wheel, die lines are avoided by this process. The apparatus comprises a humidistat for monitoring the humidity of the air fed to the blast, a valve for controlling the injection of steam into the air, and a control system between the humidistat and valve for automatically maintaining the desired humidity.

3,734,985

GLASS FIBER REINFORCED THERMOPLASTIC CELLULAR PLASTICS

Walter H. Greenberg, 220 Miller Road, Syossett, N.Y.

Filed Apr. 13, 1970, Ser. No. 28,087

Int. Cl. B29d 27/00

U.S. Cl. 264—45 **1 Claim**

Glass fibers are coated with uncured thermosetting resin selected from the group consisting of glycerol triacrylate, urea-formaldehyde and phenol-formaldehyde of the type

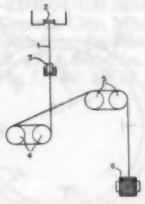
designated as B stage. About 5 percent by weight of the coated fibers, while cool, are introduced into a mixture of gas and molten thermoplastic material selected from the group consisting of polypropylene nylon and polystyene shortly (i.e. less than a minute) prior to entry into the mold of low pressure injection molding apparatus. The heat of the molten thermoplastic material brings about a curing of the thermosetting coating on the glass fibers, but such curing is so slow that it becomes effective at about the same time as the thermoplastic material cools and solidifies in the mold. The product, a thermoplastic structural foam having short fibers of thermoset-coated glass fibers distributed throughout, has greater stiffness and greater tensile strength than conventional structural foam.

3,734,986

METHOD FOR PRODUCING POLYAMIDE FIBER HAVING IMPROVED SILKY FEEL AND LUSTRE

Tetsuya Kato, Nagoya, Toshiaki Hidaka, Nishikasugai-gun, and Chikatsu Okagawa, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 31, 1970, Ser. No. 60,029
Int. Cl. B29d *27/00*; D01d *5/08, 5/12*
U.S. Cl. 264—49 **10 Claims**



Polyamide fiber having improved silky lustre and silky touch is produced by melt-spinning modified polyamide pellets obtained by dispersing fine particles of polyalkylene ether into polyamide, continuously drawing the melt spun filaments until the birefringence of said filament reaches a specific pre-selected point, treating the drawn yarn with a solvent for polyalkylene ether and recovering the same.

3,734,987

GEL CAPSULES FOR SMALL UNITS AND METHODS OF ENCAPSULATING SUCH UNITS

Bjorn Staffan Artur Hamrin, Bjarred, Sweden, assignor to Aktiebolaget Forenade Superfosfatfabriker, Landskrona, Sweden

Filed Jan. 22, 1971, Ser. No. 108,808
Claims priority, application Sweden, Jan. 29, 1970, 1,096/70
Int. Cl. A01c *1/06*; A01n *21/02*
U.S. Cl. 264—54 **11 Claims**

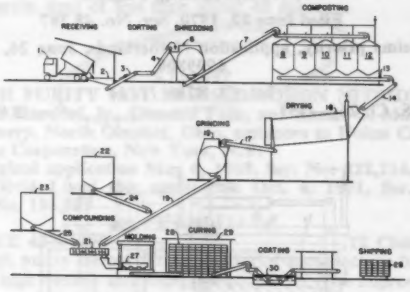
A method of encapsulating small units such as pharmaceutical preparations, seed and the like by a chemical process for obtaining a hollow capsule in which the unit is contained, said capsule preferably being formed of gelatinous matter and inflated by means of a gas generated by a chemical composition covering said unit.

3,734,988

USE OF COMPOSTED REFUSE TO MAKE CONSTRUCTION PRODUCTS

Avedis A. Aintablian, Santa Clara, Calif., assignor to International Systems Management Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 119,564, March 1, 1971, abandoned. This application Nov. 8, 1971, Ser. No. 196,767
Int. Cl. C04b *31/40, 15/02*; C05f *9/00*
U.S. Cl. 264—82 **13 Claims**



A process for converting municipal refuse into useable products such as building blocks, wall board, and building bricks which consists of the steps of reducing the size of the refuse to a chip size by shredding; decomposing the refuse in the presence of nitrogen, water and air; drying the chemically processed material in a gas fired dryer to render it biologically inert; grinding the dried material to a fine powder; mixing the powder with fillers and binders such as hydraulic setting cements and glues; adding water and other chemicals as required; forming the blocks or other building materials by pressing; and curing the product until a specified strength has been achieved.

3,734,989

FIBER BUNDLE ASSEMBLY

Richard L. Leonard, Cary, and Donald F. Carey, Durham, N.C., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,728
Int. Cl. B29d *3/00*
U.S. Cl. 264—135 **12 Claims**

An improved method for forming primary high pressure seals for water equilibrated, hollow fiber membranes, wherein a solution of gelatin is used to surround the active membrane area prior to casting the high pressure seal thereon, comprises applying a secondary, elastomeric seal to the fiber membranes prior to the application of the gelatin, which secondary seal serves as an inter-fiber barrier to the passage of gelatin thus preventing the gelatin from passing to the area of the primary high pressure seal and interfering with the sealing properties thereof.

3,734,990

PROCESS FOR THE MANUFACTURE OF CORRUGATED GLASS FIBER REINFORCED POLYVINYL CHLORIDE SHEETS

William K. Glesner, Midland, Mich., and Clifford E. Thompson, Horgen, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 590,502, Oct. 3, 1966. This application Apr. 15, 1970, Ser. No. 28,921
Int. Cl. B29g *5/00*
U.S. Cl. 264—137 **2 Claims**

The present invention is directed to an improved process for the manufacture of corrugated sheet materials from glass fiber reinforced mats impregnated with certain

polymerizable fluid compositions where the impregnated mat is shaped prior to initiation of gelling of the polymerizable fluid composition thereby providing unexpectedly enhanced uniformity and transparency in the finally cured corrugated structures.

3,734,991

METHOD FOR CUTTING PLASTIC MATERIAL

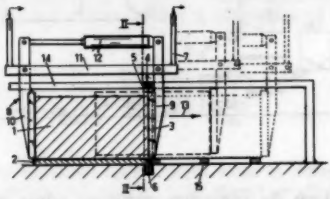
Berend Vrijma, Vuren, Netherlands, assignor to Calsilox S.A., Luxemburg, Belgium

Filed June 22, 1970, Ser. No. 48,267

Claims priority, application Netherlands, June 26, 1969, 6909800

Int. Cl. B28b *11/14*

U.S. Cl. 264—157 **3 Claims**



The invention relates to a method of cutting a block of material in a plastic state, more particularly light weight concrete, the block being cut by a number of cutting wires each tensioned between a clamping member retained above the block and a clamping member retained therebelow.

A method is provided in which the block can be cut along any selected planes parallel with a cutting direction, and in which the required conveying means can be very simple.

To this end the block is cut while being carried by carrying means engaging opposite sides of the block.

3,734,992

METHOD FOR INSULATING WIRE TERMINATIONS

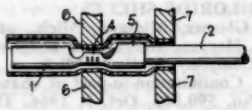
Carlo Masino and Paolo Gilardino, Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Original application Jan. 29, 1969, Ser. No. 794,882, now abandoned. Divided and this application Apr. 8, 1970, Ser. No. 29,343

Claims priority, application Italy, Jan. 31, 1968, 12,254/68

Int. Cl. H01b *19/00;* **H02g** *15/00*

U.S. Cl. 264—159 **2 Claims**



A cold crimp sleeve applicator is fed with a continuous length of sleeve material directed against a stop at a cutting station from which the cut length is transferred laterally to a crimping station, the crimping dies and the shear blade being operated simultaneously. A further transfer device is provided for moving the transferred cut length of sleeve into the crimping dies from a first transfer path and this device has a stop designed to locate the leading end of a terminal in predetermined position within the cold crimp sleeve.

3,734,993

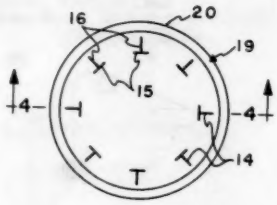
METHOD FOR EXTRUDING T-SHAPED FILAMENTS

Paul Paliyenko, 6350 Gaywind Drive, Charlotte, N.C. 28211, and Werner E. Beier, Sardis View Lane, Matthews, N.C. 28105

Original application June 20, 1968, Ser. No. 745,652, now Patent No. 3,640,670. Divided and this application July 29, 1971, Ser. No. 167,524

Int. Cl. B28h *21/54;* **B29f** *3/00*

U.S. Cl. 264—177 F **9 Claims**



Method for extruding filament-forming material through a spinnerette having a plurality of T-shaped orifices wherein the orifices are arranged annularly with respect to the center of the spinnerette. Each of the T-shaped orifices comprises a crossbar and a stem extending perpendicularly from the crossbar at its midpoint with the stem facing away from the center of the spinnerette. Further embodiments of the spinnerette include a split T-configuration.

3,734,994

TWO-STAGE UNIAXIAL ORIENTATION OF POLYETHYLENE TEREPHTHALATE FILMS

Dennis Leonard Blecha, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

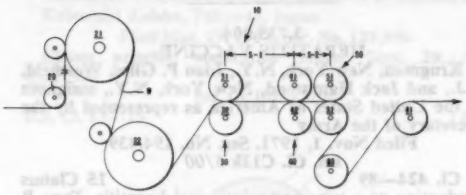
Filed Feb. 9, 1971, Ser. No. 113,850

Int. Cl. B29d *7/24*

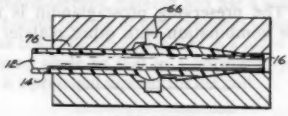
U.S. Cl. 264—288 **4 Claims**

A method of orienting a web of thermoplastic polymeric film (i.e., polyethylene terephthalate film) by stretching it in two stages in making film having high birefringence. A web of substantially amorphous film is heated to a first stretching temperature by first heating means and stretched in a first stretching span between first and second sets of nip rolls of a first stretching means. The first stretching temperature to which the web is heated is from 72° to 86° C. whereby, upon first stretching, cold stretching does not occur. Then, this stretched film is heated, from 91° to 102° C., by second heating means to a second stretching temperature and stretched again in a second stretching span, whose length is less than the

length of the first stretching span, between second and third sets of nip rolls of a second stretching means whereby to a make a film having improved birefringence properties.



3,734,995
METHOD OF FORMING AN INSULATED FEED-THROUGH SEAL
Chas E. Thomas, Cement City, Mich., assignor to Sparton Corporation, Jackson, Mich.
Filed Nov. 18, 1971, Ser. No. 200,103
Int. Cl. B29c *17/00*; H01b *17/30*
U.S. Cl. 264—322 3 Claims



A sheathed electrical conductor adapted to extend through a plate or panel in a sealed condition, and electrically insulated therefrom, wherein the sheath of dielectric insulation defined on the conductor homogeneously forms sealing and orientation structure. The conductor includes a metallic core surrounded by a thermoplastic dielectric sheath wherein the sheath is heated and molded to homogeneously define the sealing structure. An O-ring is employed in conjunction with the molded structure for sealing cooperation with the panel. The invention contemplates a method of manufacturing an electrical conductor in accord with the invention whereby the sealing structure homogeneously formed of the conductor sheath material may be created by heating a portion of the conductor and inserting the same into a die to form the desired configuration by extrusion and molding.

3,734,996
PREPARATION OF TITANIUM DIOXIDE CONCENTRATES AND IRON OXIDE PIGMENTS FROM ILMENITE
Heribert Bade, August Bellefontaine, and Gerhard Kienast, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 19, 1970, Ser. No. 90,918
Claims priority, application Germany, Dec. 2, 1969, P 19 60 379.3
Int. Cl. C01g *49/06*
U.S. Cl. 423—83 8 Claims

Ilmenite, preferably after pre-oxidation, is reduced to convert iron oxide contained therein to iron, the ilmenite is treated with nitrobenzene at about 20 to 100° C. and a pH of 3 to 7 to oxidize the iron to iron oxide pigment which can be separated in relatively pure form from the titanium dioxide concentrate. The concentrate is then preferably leached with acid to remove residual iron impurities and leave a relatively pure titanium dioxide suited for chlorination.

Modifying agents present during the nitrobenzene oxidation will affect the color of the iron oxide pigment.

To facilitate clean separation of the iron oxide pigment from the titanium dioxide concentrate the reduced ilmenite should not contain an appreciable amount of particles with grain sizes of less than about 40 microns.

3,734,997
HIGH PURITY HOT PRESSED BORON NITRIDE
Victor Mandorf, Jr., Olmsted Falls, and Lionel C. Montgomery, North Olmsted, Ohio, assignors to Union Carbide Corporation, New York, N.Y.
Original application May 6, 1969, Ser. No. 822,214. Divided and this application Oct. 4, 1971, Ser. No. 186,083
Int. Cl. C01b *21/06*
U.S. Cl. 423—290 12 Claims

High purity boron nitride articles of manufacture having a high density and improved properties. The improved boron nitride articles have a unique acicular crystal structure, an oxygen content of less than 0.5 percent by weight, a density of at least 1.9 grams/cc., excellent hot strength, low and substantially isotropic coefficients of thermal expansion with no irreversible thermal expansion, excellent thermal schock resistance, moisture insensitivity and improved dielectric properties. These articles are produced by treating conventional hot pressed boron nitride articles with a suitable solvent to lower their boron oxide (B_2O_3) content, and then sintering the treated material in an inert atmosphere at a temperature of from 1600° C. to 2100° C. in the absence of pressure or mechanical restraint.

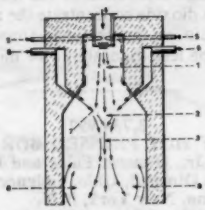
3,734,998
PROCESS FOR THE PRODUCTION OF HYDRAZOIC ACID
Loyd W. Piester, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 24, 1970, Ser. No. 92,341
Int. Cl. C01b *21/08*
U.S. Cl. 423—406 25 Claims

The production of hydrazoic acid by acidifying an alkali metal azide or alkaline earth metal azide is described. Residual hydrazoic acid dissolved in the reaction mixture is stripped and recovered, thereby improving the yield of the process and reducing the azide contamination of the by-product liquid.

3,734,999
CONTROL OF CARBON BLACK QUALITY
Robert E. Dollinger, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of abandoned application Ser. No. 838,265, July 1, 1969. This application Oct. 21, 1971, Ser. No. 191,504
Int. Cl. C09c *1/50*
U.S. Cl. 423—450 7 Claims

Carbon black quality is controlled in a carbon black process wherein the smoke is prequenched to reduce the extent of the reaction prior to the final quench which terminates the reaction by measuring the concentration of methane and/or acetylene of the finally quenched smoke and adjusting the prequench according to said measurement to maintain the concentration of methane and/or acetylene in the finally-quenched smoke at a predetermined level.

3,735,000
PROCESS FOR PREPARING TITANIUM DIOXIDE
Benedetto Calcagno and Luigi Piccolo, Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
Filed July 14, 1970, Ser. No. 54,715
Claims priority, application Italy, July 31, 1969, 20,367/69
Int. Cl. C01g *23/04*
U.S. Cl. 423—613 **6 Claims**



Titanium tetrachloride is oxidised to titanium dioxide in a burner-heated chamber of particular design preventing formation of deposits on the walls and in the feed passages for titanium tetrachloride.

3,735,001
TECHNETIUM BONE SCANNING MEDIUM
James McRae, El Cerrito, Donald C. Van Dyke, Berkeley, and Yukio Yano, Richmond, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed May 24, 1972, Ser. No. 256,233
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **9 Claims**

An aqueous solution of ethane-1-hydroxy-1,1-diphosphonate (EHDP) is added to an acidic solution of stannous chloride and mixed. $^{99m}TcO_4$ in isotonic saline solution is then added and the mixture is again mixed. The solution is adjusted to a pH of about 6–7 yielding a preparation appropriate for injection into a subject. The medium is highly specific with respect to deposition in the skeleton while troublesome and undesired effects such as colloid formation, binding to blood proteins, localization in the kidneys, etc., are avoided.

3,735,002
BONE DECALCIFICATION COMPOSITION
Mary F. Poston, 14527 Littleford, Houston, Tex.
Filed Oct. 27, 1971, Ser. No. 193,164
Int. Cl. G01n *1/00*
U.S. Cl. 424—3 **6 Claims**

A bone decalcification composition wherein an aqueous solution of about 2 grams of sodium oxalate or potassium oxalate is dissolved in about 100 cubic centimeters of formic acid, having a concentration of about 22 percent, which composition is capable of penetrating bone tissue and extracting calcium therefrom to render the bone soft enough to cut with a knife or the like into microscopic sections within a period of about 24 hours or less and without destroying cancer cells or elastic tissues with the bone.

3,735,003
AEROSOL HAIR-SETTING COMPOSITION COMPRISING AN INTERPOLYMER OF AN N-3-OXOALKYLAMIDE AND α,β-UNSATURATED ALIPHATIC ACID
Gerhard Zimmer, 20 Siemensstrasse, Kelkheim, Taunus, Germany, and Hermann Stein, 152 Mullheimerstrasse, Basel, Switzerland
No Drawing. Filed Dec. 15, 1969, Ser. No. 885,352
Int. Cl. A61k
U.S. Cl. 424—47 **4 Claims**

A hair-setting composition suitable for application to the hair preferably in the form of an aerosol spray is disclosed. The composition comprises a copolymer of an N-3-oxohydrocarbon-substituted amide of an α,β-unsaturated aliphatic carboxylic acid; α,β-unsaturated aliphatic mono-and/or dicarboxylic acids; and optionally a monoester of an α-unsaturated aliphatic mono-or dicarboxylic acid.

3,735,004
HEPATITIS VACCINE
Saul Krugman, New York, N.Y., Joan P. Giles, Westfield, N.J., and Jack Hammond, New York, N.Y., assignors to the United States of America as represented by the Secretary of the Army
Filed Nov. 1, 1971, Ser. No. 194,439
Int. Cl. C12k *5/00*
U.S. Cl. 424—89 **15 Claims**

Production of a vaccine against viral hepatitis, Type B and administration thereof to humans. The vaccine is prepared by boiling viral hepatitis, Type B serum.

3,735,005
METHOD FOR PREPARING A VIABLE PLATELET CONCENTRATE
Hideo Shio, Palo Alto, and Peter W. Ramwell, Portola Valley, Calif., assignors to Alza Corporation, Palo Alto, Calif.
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,317
Int. Cl. A61k *17/00;* **C12k** *9/00*
U.S. Cl. 424—101 **7 Claims**

A method for the preparation of a viable platelet concentrate while simultaneously preserving the platelet's function and integrity by adding to plasma-containing platelets, a platelet-preserving prostaglandin and separating the platelets from the plasma to give a viable platelet concentrate. The preserving prostaglandin is used alone or in intimate combination with other platelet preserving agents.

3,735,006
NOVEL ANTIBIOTICS PRODUCED FROM THE STRAINS OF *STREPTOMYCES PHAEOVERTICILLATUS* AND THEIR METHOD OF PREPARATION
Kazuo Asano, Ibaraki-shi, Minoru Furukawa, Kyoto-shi, and Nobuo Kanda, Osaka-shi, Japan, assignors to Daiichi Seiyaku Company, Limited, Tokyo, Japan
Filed July 25, 1969, Ser. No. 844,862
Claims priority, application Japan, Nov. 20, 1968, 43/84,502
Int. Cl. A61k *21/00;* **C12b** *1/00;* **C12k** *1/00*
U.S. Cl. 424—122 **21 Claims**

Two antibiotic substances are produced by cultivation of strains of *Streptomyces phaeoverticillatus,* preferably newly separated strains of *Streptomyces phaeoverticillatus* var. *takatsukiensis* (ATCC 21395, 21396 and 21397) in a nutrient medium containing anthraquinone sulfonic acid or metal salts thereof. Each of the above antibiotics afforded the same acetylated derivative.

These three substances, 289-FO, 289-F and Acetyl 289-F, have an inhibitory activity against the growth of certain microorganisms, including bacteria.

3,735,007
CLEAR LIQUID LAXATIVE-ANTACID COMPOSITION
Herbert Lapidus, Edison, N.J., and Leonard Mackles, New York, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,243
Int. Cl. A61k *27/00*
U.S. Cl. 424—158 **10 Claims**

A clear liquid laxative-antacid composition containing magnesium hydroxide, an amino acid and an oxy or oxo acid in an aqueous medium.

ELECTRICAL

3,735,008
ELECTRIC FURNACE

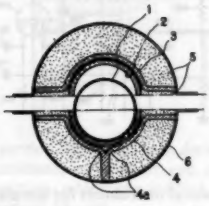
Motoi Ieda; Yoichi Mizushina, both of Kawasaki, and Masaru Shimazaki, Tokyo, all of Japan, assignors to Kokusai Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 19, 1971, Ser. No. 125,986

Claims priority, application Japan, Mar. 20, 1970, 45/27330

Int. Cl. H05b *3/66*

U.S. Cl. 13—25 **1 Claim**



An electrically energizable heating coil having a plurality of convolutions about its longitudinal axis. The coil is kept from deforming by a tubular insulator split longitudinally in a plane corresponding with the longitudinal axis of the coil so that it comprises two half-cylinders. Avoiding deformation allows uniform heat distribution by the coil. The tubular insulator is made of a thermosetting material and has a supporting radial rib axially thereof on one of half-cylinders along the full axial length of the coil. The rib is disposed in a plane normal to the first-mentioned plane so that in a horizontal position of the coil the rib is a principal support for the coil.

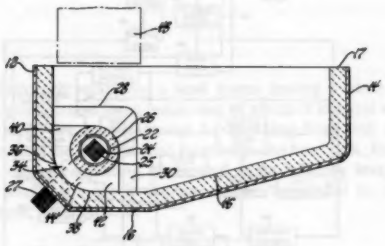
3,735,009
ELECTRIC INDUCTION HEATING FURNACE AND METHOD FOR PREHEAT THEREOF

John M. Larkin, 9411 South Turner St., Evergreen Park, Ill.

Filed Dec. 27, 1971, Ser. No. 212,082

Int. Cl. H05f *5/14*

U.S. Cl. 13—29 **12 Claims**



In accordance with the invention there is provided a channel type electric induction furnace for heating molten metal comprising a refractory lined receptacle having an open-ended hearth portion of large cross sectional area for holding a mass of the molten metal and an induction heating portion comprising a channel which is of small cross sectional area and which is formed by a refractory covered electrical induction coil positioned adjacent a side wall and a bottom wall of the receptacle, the end of the channel adjacent the side wall being oriented in a direction of less than about 45° from vertical and aligned with the open end of the hearth portion, and the end of the channel adjacent the bottom wall being oriented in a direction of less than about 60° from horizontal, the two ends of the channel communicating with the hearth portion in divergent directions.

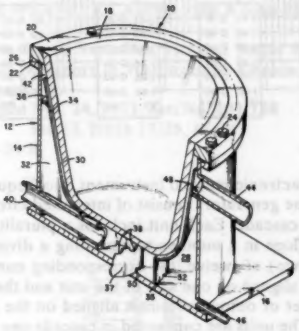
3,735,010
SKULL-MELTING CRUCIBLE

John N. Turpin, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 23, 1972, Ser. No. 283,018

Int. Cl. F27d *1/12*

U.S. Cl. 13—35 **6 Claims**



This invention is directed to an improved crucible for skull melting metals and alloys by employing consumable electrode arcmelting procedures. The crucible is formed of a housing containing a removable, relatively thin, cup-shaped liner and a substantially conforming enclosed chambered volume through which liquid metal is channeled and circulated for uniformly cooling the liner.

3,735,011
CIRCULAR REFRACTORY BRICK CONSTRUCTION

Ferhun H. Soykan, New Hartford, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,340

Int. Cl. F27d *1/04*; **H05b** *5/00*

U.S. Cl. 13—35 **5 Claims**

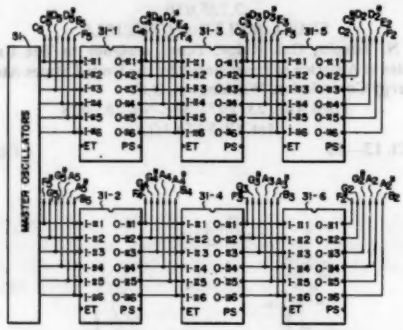
Circular crucible or the like constructed from arcuate refractory bricks wherein the mating edges of the bricks are at uniform acute angles with respect to the radius of the furnace. This permits each brick to slide on the mating edges of adjacent bricks such that circumferential or tangential thermal expansion forces will not materially increase the radius of the crucible.

3,735,012

INTEGRATED CIRCUIT FREQUENCY DIVIDERS IN ELECTRONIC MUSICAL INSTRUMENT

Katsuhiko Hirano, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Feb. 22, 1971, Ser. No. 117,527
Claims priority, application Japan, Feb. 25, 1970, 45/19106
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 7 Claims



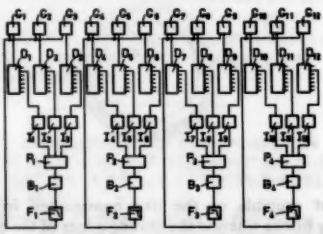
In an electronic musical instrument, the frequency dividers for the tone generators consist of integrated circuit units connected in cascade. Each unit includes a plurality of independent flip-flops in a number representing a divisor (six, four, three or two) of twelve, the corresponding number of input terminals aligned on one side of the unit and the corresponding number of output terminals aligned on the opposite side thereof. The units are connected in cascade one after another with every flip-flop in one unit dealing with different tone name signal in an octave and the corresponding flip-flops in separate units constituting a divider chain for the same-named tones. Inter-unit wirings become very simple.

3,735,013

SYSTEM FOR PRODUCING AN APERIODIC VIBRATO SIGNAL

Cornelis Johannes Van Der Peet, deceased; by Casper Antonius Henricus Mulkens, acting administrator, and Willem Ruiterkamp, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 182,068
Claims priority, application Netherlands, Sept. 22, 1970, 7013955
Int. Cl. G10h 1/02
U.S. Cl. 84—1.25 4 Claims



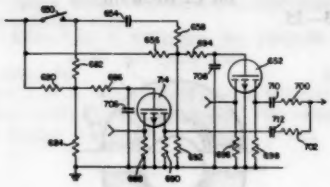
A system for producing a vibrato signal which varies in frequency in a manner uncorrelated with time in an electronic musical instrument, in which at least two dissonant signals are applied to a control input of each tone generator via a gate circuit, a divider chain and a low-pass filter.

3,735,014

ELECTRONIC MUSICAL INSTRUMENT SIMULATING CHIFF, TRACKER, AND DYNAMIC KEYING

William D. Turner, 108 Manchester Avenue, Moylan, Pa.

Continuation-in-part of Ser. No. 19,641, March 16, 1970, Pat. No. 3,647,928, which is a continuation-in-part of Ser. No. 713,594, March 18, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,297
Int. Cl. G10h 1/02
U.S. Cl. 84—1.24 21 Claims



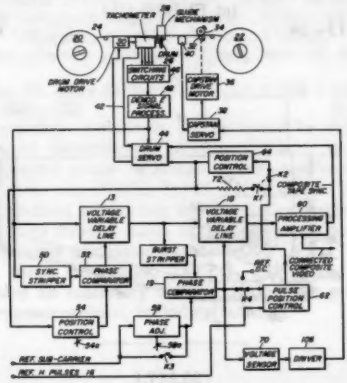
An electrical musical instrument for simulating pipe organs, and having a natural ensemble effect, spatial tone-distribution effect, air turbulence effect, wind-pressure-change effect, tracker keying effect, piano voice keying effect, and exact differently modulated harmonic pitch registers for mutation and compound stops and chiff. Insulated gate field-effect transistors are used for switching tone and chiff frequency currents so that the change in amplitude is sigmoid during turn-on and turn-off. RC circuitry in combination with the switching insulated gate field-effect transistors permit tracker keying and piano voice keying.

3,735,015

COLOR FRAME LOCK CONTROL FOR SIGNAL REPRODUCING SYSTEMS

Charles Mesak, El Segundo, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 172,982
Int. Cl. H04n 5/78
U.S. Cl. 178—5.4 CD 11 Claims



A system for causing a color video tape machine to always lock to the correct color frame in which the machine is allowed to lock up randomly and the locking characteristic examined to ascertain whether lockup has occurred on the correct or incorrect color frame. If lockup is on the correct color frame, the playback machine is allowed to function normally, but if it is incorrect, a signal is generated and applied to the capstan servo which momentarily speeds up the capstan drive motor to move the tape forward by an amount corresponding to one frame.

3,735,016

COAXIAL LINE SECTION

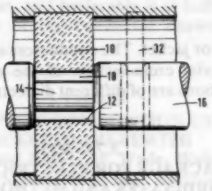
Georg Spinner, Erzgiessereistr. 33, Munich, Germany

Filed Aug. 6, 1971, Ser. No. 169,773

Claims priority, application Germany, Aug. 27, 1970, P 20 42 565.6

Int. Cl. H01b 9/04

U.S. Cl. 174—28 11 Claims



A coaxial line section supported by a dielectric support of a high dielectric constant; an annular gap inside the support around the line section, which gap is filled with a material of low dielectric constant, like air.

3,735,017

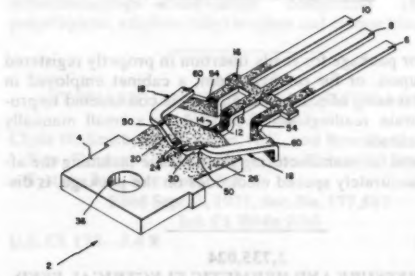
LEAD FRAMES AND METHOD OF MAKING SAME

Randy Marshall Manning, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 12, 1971, Ser. No. 133,065

Int. Cl. H01r 9/00

U.S. Cl. 174—52 S 5 Claims



The disclosure relates to a lead frame having a platelike heat sink portion and three leads, one of which is integral with the heat sink, are manufactured by blanking heat sink and leads, bending the integral lead relative to the heat sink, forming ends of the remaining leads, and again bending integral leads so that leads are in a plane which is parallel to, and spaced from, the heat sink.

3,735,018

SUPERCOOLED ELECTRIC CABLE

Wolfram Griesinger, Ottobrunn, Germany, assignor to Kabel- und Metallwerke Gutenhoffnugshutte Aktiengesellschaft, Hannover, Germany

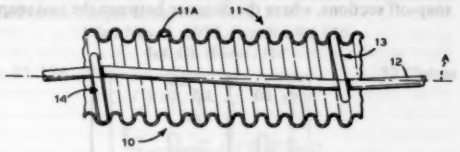
Filed Aug. 30, 1971, Ser. No. 175,937

Claims priority, application Germany, Sept. 2, 1970, P 20 43 451.1

Int. Cl. H01b 9/04; H01v 11/00

U.S. Cl. 174—28 8 Claims

A supercooled electric cable having a conductor element centrally disposed within a tubular sheath for passing a coolant such as liquid helium therethrough, spacer elements being provided for locating the conductor element relative to the tubular sheath; the spacer elements being of a configuration



such as to maintain the conductor element in a selected position relative to the sheath during the installation of the cable as well as at operating temperatures.

3,735,019

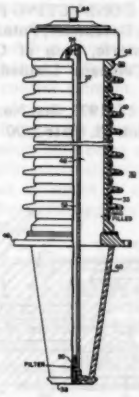
FLEXIBLE WEATHER CASING FOR A GAS FILLED BUSHING

Robert L. Hess, North Versailles, Pa., and James H. Frakes, Tucson, Ariz., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1971, Ser. No. 201,758

Int. Cl. H01b 17/26, 17/36

U.S. Cl. 174—31 R 6 Claims



An improved insulating device comprising a main tubular insulating structure on which are mounted a plurality of overlapping flexible weather sheds.

3,735,020

HEAT SINK WALL PLATE WITH OFF-CENTER MOUNTING OPENINGS

Joseph Licata, Schnecksville, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

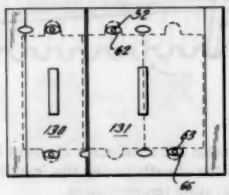
Filed Sept. 29, 1971, Ser. No. 184,861

Int. Cl. H02g 3/14

U.S. Cl. 174—66 21 Claims

A light control switch device for mounting in a wall box has a conductive front mounting plate arranged to overlap the edges of the wall extending around the opening receiving the wall box. Mounting-screw receiving openings are disposed in the wall plate, with one pair of openings aligned vertically centrally of the plate while two additional openings are formed on opposite sides of the center line of the plate, and in horizontal alignment with respective ones of the pair of centrally aligned

openings. The spacing between a central opening and a laterally displaced opening is equal to one-half the distance between the screw-receiving openings of a standard wall box. The vertical edges of the wall plate are then provided with snap-off sections, where the distance between the two snap-off



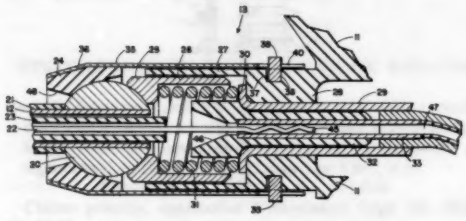
sections is equal to some multiple of the distance between the screw-receiving openings of a conventional wall box. Switch devices may then be ganged in a multiswitch wall box either with or without snap-off sections. The front surface of the conductive face plate contains heat-radiating fins.

3,735,021

ELECTRICALLY CONDUCTING PIVOTAL JOINT

David Raynes Bonis, N. Dorchester, Putnam, Ontario, and Eric Foster, London, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed June 11, 1971, Ser. No. 152,244
Int. Cl. H01r 5/00
U.S. Cl. 174—86 **10 Claims**



Electrically conducting pivot joint which provides continuous shielding. The inner conductor is connected through the pivot joint and the outer conductor is connected by shielding elements around the path of the inner connector. The joint is specifically designed for the lightweight headset. Complete rotational movement and angular movement of the boom is available. At the same time the boom is held in a set position. A high impedance transducer can be used for the microphone.

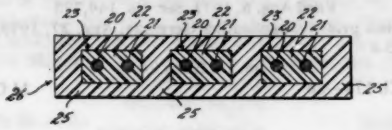
3,735,022

INTERFERENCE CONTROLLED COMMUNICATIONS CABLE

Alton W. Estep, R. D. No. 1, North Wales, Pa.

Filed Sept. 22, 1971, Ser. No. 182,740
Int. Cl. H01b 7/02
U.S. Cl. 174—117 F **2 Claims**

A communication cable having a plurality of pairs or triplets of parallel conductors, wherein each pair or triplets of conductors are imbedded in a first insulation material to form a core, and a plurality of cores are imbedded in a second insula-



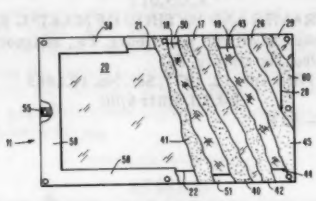
tion material, or jacket. The conductors extend in planar form through an axial cross-section of the cable. The first and second insulations are of different dielectrics.

3,735,023

SENSOR PACKAGE FOR ELECTRICAL SENSING OF PLANE COORDINATES AND METHOD OF PREPARING THE SAME

George S. Hurst, and William C. Colwell, Jr., both of Oak Ridge, Tenn., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Apr. 19, 1972, Ser. No. 245,564
Int. Cl. H01b 7/08
U.S. Cl. 174—117 FF **10 Claims**



A sensor package for ready insertion in properly registered position upon, or for removal from, a cabinet employed in electrical sensing of plane coordinates, is constructed to provide accurate readings when pierced by a small manually operated cursor.

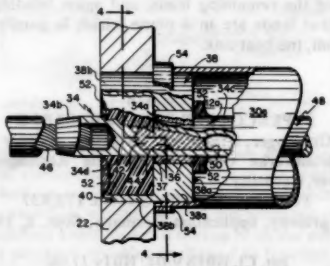
A method for manufacturing the package including the affixing of accurately spaced electrodes on the package, is disclosed.

3,735,024

HIGH-PRESSURE AND HERMETIC ELECTRICAL FEED-THROUGH APPARATUS

Edward R. Walker, Sr., Natick, Mass., assignor to D. G. O'Brien Inc., Framingham, Mass.

Filed May 10, 1971, Ser. No. 141,794
Int. Cl. H01b 17/26; C03c 27/02
U.S. Cl. 174—151 **19 Claims**



A leak-proof and pressure-tight seal at the passage of an electrical current conductor through a wall employs an elec-

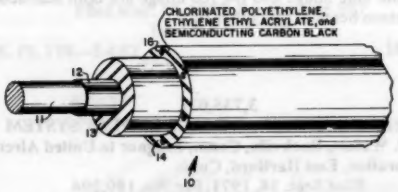
trical conductor which is tubular and contains therein a core of hard material having a low coefficient of thermal expansion. A collar-like electrically insulating member encircles the conductor about the core and radially compresses the conductor inward onto the core. The insulating member is seated in the conductor-passing aperture in the wall and the wall exerts significant radial compression onto the collar-like member to compress it firmly against the tubular conductor. Further, the cross-sectional area of the conductor around the core is not substantially less than, and preferably is at least equal to, the cross-sectional area of the conductor elsewhere along its length.

3,735,025

SEMICONDUCTING COMPOSITION AND CABLE JACKETED THEREWITH

Ting H. Ling, Marion; Robert M. Wade, Wabash, and Marwick H. Solomon, Muncie, all of Ind., assignors to Anaconda Wire and Cable Company, New York, N.Y.

Filed July 30, 1971, Ser. No. 167,741
Int. Cl. H01b *5/16, 9/02*
U.S. Cl. 174—120 SC **6 Claims**



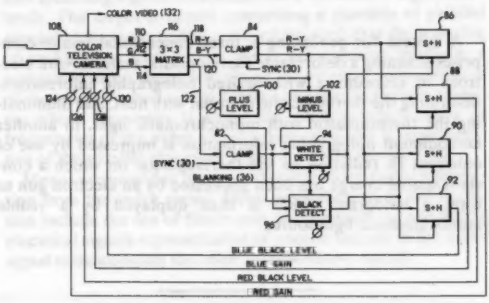
Electrical cables are jacketed with a novel thermoplastic semiconducting composition comprising chlorinated polyethylene, ethylene ethyl acrylate and carbon black.

3,735,026

AUTOMATIC COLOR CORRECTOR FOR A COLOR VIDEO SIGNAL

Clyde W. Smith, North Salem, N.Y., and Renville H. McMann, New Canaan, Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,567
Int. Cl. H04n *9/00*
U.S. Cl. 178—5.4 R **15 Claims**



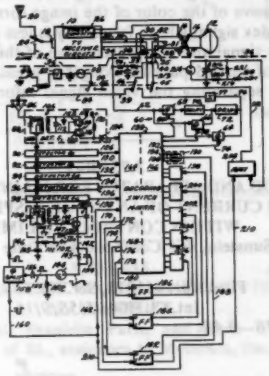
A video signal color corrector automatically operative to restore standard color balance in a color video signal. Video signal color content is detected in substantially black and substantially white portions of the video signal where there should be little or no color. This color content during white and black portions is then used to generate error signals which have proportional and constant components respectively. The error signal is combined with the video signal to cancel erroneous color information and restore the standard color balance.

3,735,027

DECODING SCRAMBLED TELEVISION

Jordan J. Corwin, Levittown, and William J. Shanahan, Northport, both of N.Y., assignors to Skiatron Electronics Television Corporation, New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,115
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **32 Claims**



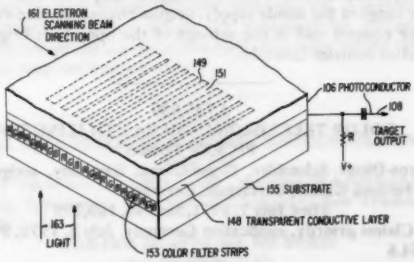
A scrambled television decoder and its installation to a conventional television receiver by merely making a direct connection to the socket of the cathode ray tube so as to intercept only the single line that normally carries the video signals to the beam intensity control element. Signals are generated without direct connection to the television receiver, by placing a neon glow discharge tube adjacent the electromagnetic deflection coil, the neon tube being connected internally to the decoder to the relaxation oscillator and monostable multivibrator, the output of which is connected through the cathode ray tube socket to the appropriate control element for regular blanking purposes.

3,735,028

TELEVISION CAMERA SYSTEM WITH A SINUSOIDALLY VARYING INDEXING SIGNAL

Dalton Harold Pritchard, and Walter Edgar Sepp, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,497
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **24 Claims**



Light from a scene is directed through the faceplate of an image pickup device having an electron gun operative to

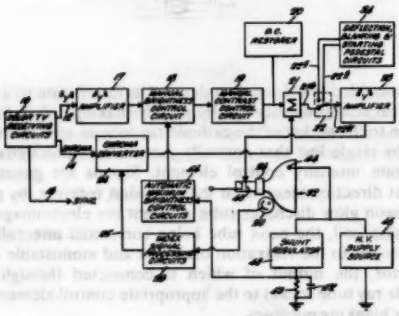
produce an electron beam. The light impinges upon a layered target structure including a photoconductor and a conductive signal electrode. The target structure is comprised of a first and second plurality of spaced parallel elongated areas. The widths of the first and second plurality of spaced parallel elongated areas in the direction of scanning differing cyclically from smaller widths to progressively larger widths back to smaller widths of varying conductivity such that the scanning of an electron beam across the target structure produces a composite video signal containing a color information signal representative of the color of the image formed on the target and an index signal whose frequency is less than the color information signal and is representative of the first and second plurality of spaced parallel elongated areas. Means are provided for separating the video signal information from the index signal.

3,735,029

METHOD AND APPARATUS FOR MAINTAINING THE BEAM CURRENT OF AN IMAGE-DISPLAY DEVICE WITHIN CONTROLLED LIMITS

David E. Sunstein, 464 Conshohocken State Road, Bala-Cynwyd, Pa.

Filed Apr. 9, 1971, Ser. No. 132,692
Int. Cl. H04n *5/58, 9/16*
U.S. Cl. 178—5.4 R **25 Claims**



Harmful defocusing of the cathode-ray beam in the picture tube of a color television receiver caused by the effects of excessive beam current is prevented by sensing the effects of high average beam current and producing a control signal which is applied so as to oppose and prevent excessive average beam current, while also providing for maintenance of a minimum value of beam current. Preferably, a control signal is created by sensing whether the anode high-voltage supply for the cathode-ray tube is operating safely within its useful voltage regulating range, and the control signal is applied to a feedback loop to reduce the gain or the DC level of the intensity control signal applied to the cathode-ray tube, in a manner to limit the maximum average brightness and/or contrast of the produced color television image to keep within the regulator range of the anode supply, despite changes in received picture content and in the settings of the operator's brightness and/or contrast controls.

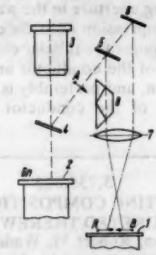
3,735,030

COLOR TELEVISION CAMERA UTILIZING TWO PICKUP TUBES

Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed July 7, 1971, Ser. No. 160,279
Claims priority, application Germany, July 8, 1970, P 20 33 754.6
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 ST **7 Claims**

A color television camera comprises two camera tubes and optical means splitting an incident light beam into three partial beams corresponding respectively to three different parts of the visible spectrum, the green or luminance partial beam being supplied to one of the camera tubes and the red and the



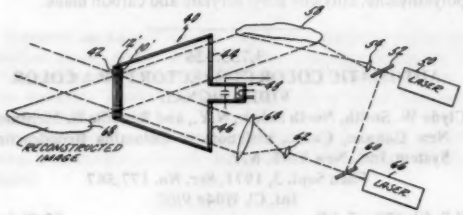
blue partial beam being supplied to the other camera tube. The red image is mirror inverted with respect to the blue image; the blue image and the red image are both scanned by one electron beam of said other tube.

3,735,031

THREE-DIMENSIONAL IMAGE DISPLAY SYSTEM

James P. Waters, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 14, 1971, Ser. No. 180,294
Int. Cl. H04n *5/82, 9/54*
U.S. Cl. 178—6.5 **1 Claim**



A system for producing a three-dimensional image comprises scanning a deformable thermoplastic material with electrons in accordance with desired holographic information, deforming the thermoplastic material with heat, and illuminating the thermoplastic with monochromatic light. In another embodiment holographic information is impressed by use of coherent IR radiation on the thermoplastic on which a constant spatial charge has been impressed by an electron gun to form a hologram which is then displayed by a visible monochromatic light source.

3,735,032

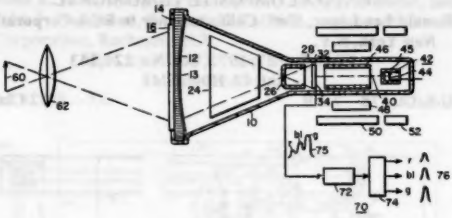
TELEVISION PICK-UP TUBE DEVICE

Gerhard W. Goetze, Elmira, and Rolf R. Beyer, Horseheads, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 9, 1969, Ser. No. 814,607
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **23 Claims**

The invention comprises the application of a color filter as-

sembly in conjunction with a fiber optic type faceplate of a



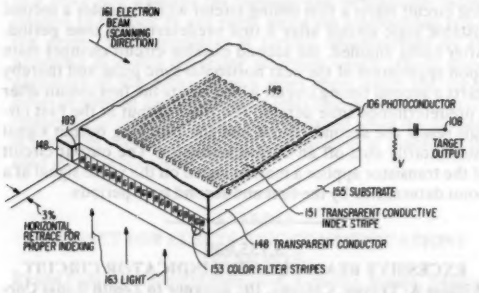
pick-up tube to render the pick-up tube responsive to color information.

3,735,033

TELEVISION CAMERA SYSTEM WITH ENHANCED FREQUENCY RESPONSE

Jay Jerome Brandinger, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,587
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **18 Claims**



Light from a scene is directed through the faceplate of an image pickup having an electron gun operative to produce an electron beam. The light impinges upon a layered target structure including a photoconductor and a conductive signal electrode. The target structure comprising a plurality of parallel elongated areas of varying conductivity such that the scanning of an electron beam across the target structure produces a composite video signal containing information representative of the image formed on the target and periodic current impulses whose frequency is above the predetermined range of frequencies of the video signal information and is representative of the parallel elongated areas of varying conductivity.

Means are provided for separating the video signal information from the index signal. Other embodiments of the invention include the use of filters with the invention for producing electrical signals representative of a scene and use of the index signal to demodulate the color representative signals.

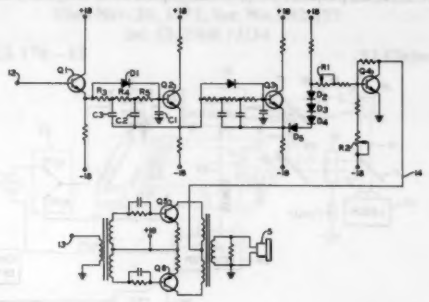
3,735,034

LEVEL MODULATOR FOR FACSIMILE TRANSMITTER

William E. Richeson, Jr., Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Continuation of Ser. No. 826,506, May 21, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,249
Int. Cl. H04n *1/40;* **H04b** *1/00;* **H03h** *7/00*
U.S. Cl. 178—7.1 **3 Claims**

A scheme for level modulating a continuous wave frequency modulated signal is disclosed which gives enhanced signal to noise ratios and which finds particular utility in a facsimile transmission system. The level modulator utilizes a unique ac-



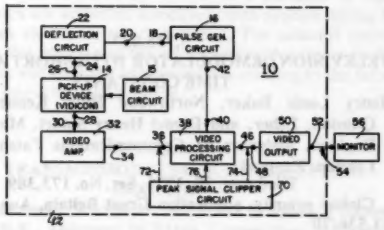
tive filter circuit which has asymmetrical response characteristics.

3,735,035

CIRCUIT FOR SELECTIVELY LIMITING VOLTAGE MAGNITUDES

Walter Kowalski, Franklin Park, and Jude P. Schmidt, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 13, 1971, Ser. No. 143,123
Int. Cl. H04n *5/14, 5/20*
U.S. Cl. 178—7.1 **11 Claims**



The limiting circuit selectively controls the maximum peak magnitude of a signal with respect to a reference derived from the normal peak magnitude of the signal. Included in the circuit is an electron control device connected between a capacitor and a path having the signal thereon. The electron control device is rendered conductive by the signal which charges the capacitor to the reference level. A voltage controlled switch has a first electrode coupled to the signal path and a second electrode coupled to the capacitor. The switch normally provides a high impedance but in response to the maximum signal magnitudes causing a threshold voltage of a selected value between the first and second electrodes thereof, it provides a low impedance which clamps the instantaneous, maximum magnitudes of the signal on the path to a value which varies directly with the reference level.

3,735,036

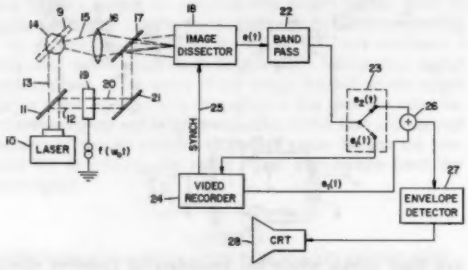
REAL TIME INTERFEROMETRY CONTOUR MAPPING SYSTEM

Albert Macovski, Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed Oct. 26, 1970, Ser. No. 84,031
Int. Cl. H04n *5/30*
U.S. Cl. 178—6.8 **43 Claims**

A real time holographic interferometer for measuring height variations or contours on the surface of an object is dis-

closed. Two interference patterns are formed, one of an object whose surface is to be mapped and one of a reference plane or other standard surface using holographic techniques. The interference patterns form visual inputs to a television camera



which converts them into electrical signals. These electrical signals are combined to produce an output which contains information relative to the height variations or altitude contours of the object and the height contour information is displayed on an appropriate display device.

3,735,037

TELEVISION DEMODULATOR WITH SHORT AND LONG TIME CONSTANTS

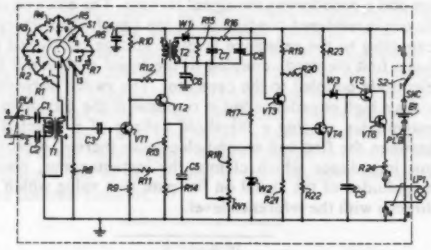
Henry Louis Baker, Northwood Hills; Kenneth Charles Quinton, Esher, and Daniel Henry Smart, Morden, all of England, assignors to Communications Patents Limited, London, England

Filed Aug. 20, 1971, Ser. No. 173,389

Claims priority, application Great Britain, Aug. 28, 1970, 41,536/70

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.3 R **6 Claims**



A demodulator for television or like signals having modulated and cyclic signals intermixed comprises two cascaded demodulators having respective short-and long-time constants compared to the modulation content and a signal level sensor between the cascaded demodulators responsive to the cyclic signals connected to provide an input signal to the second demodulator.

3,735,038

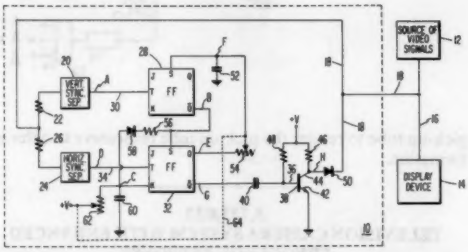
MEANS FOR SUPERIMPOSING A MARKER SIGNAL ONTO A COMPOSITE VIDEO SIGNAL

Ronald Lee Loper, Simi, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,243

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.3 R **12 Claims**



A circuit for generating a marker signal on a video signal at a predetermined point in a stream of composite video signals. Each vertical sync pulse causes a clock pulse to be applied to a first bistable logic circuit. The switched output state of the first circuit starts a first timing circuit which enables a second bistable logic circuit after a first predetermined time period. After being enabled, the second bistable circuit changes state upon application of the next horizontal sync pulse and thereby starts a second timing circuit which resets the first circuit after a predetermined time period. The reset output at the first circuit resets the second circuit and the changing output signal momentarily cuts off an output transistor. The output circuit of the transistor applies a marker signal on the video signal at a point determined by the first and second time periods.

3,735,039

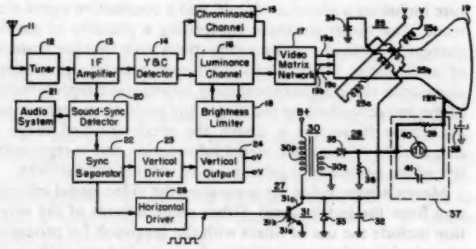
EXCESSIVE BEAM CURRENT INDICATOR CIRCUIT

William A. Trzyna, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 204,815

Int. Cl. H04n *5/00*

U.S. Cl. 178—7.5 R **5 Claims**



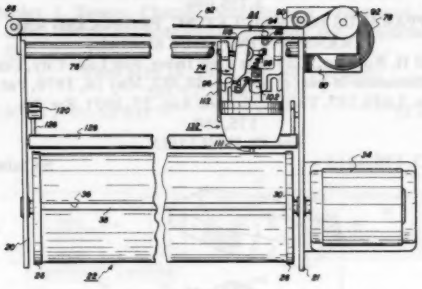
An excessive beam current indicator circuit in a television receiver for indicating whenever the beam current in a cathode-ray tube exceeds a predetermined, maximum "safe" level. The indicator circuitry utilizes the anode current supplied to the second anode of a cathode-ray tube to develop a voltage drop across a resistor interposed in the anode lead. The voltage drop, representative of the actual beam current, is applied to a switch device, such as a neon bulb, causing it to ignite whenever its firing potential is exceeded. Proper selection of the resistor insures that the neon device will light only when the beam current exceeds the maximum "safe" level.

3,735,040

FACSIMILE TRANSCEIVER

Vernon E. Punt, Fairport; Charles G. Van Neil, Webster, and John F. Hatzmann, Rochester all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Apr. 8, 1970, Ser. No. 26,543
Int. Cl. H04n 1/14
U.S. Cl. 178—7.6 11 Claims



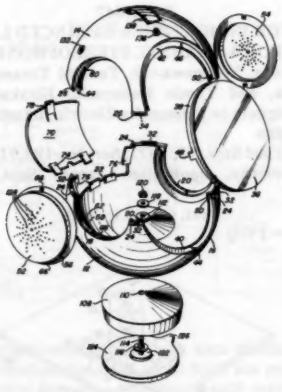
Facsimile transceiver of the drum scanning type wherein the writing stylus and scanning head carriage is releasibly attached to a drive belt whereby the carriage can be manually moved relative to the belt to any point along the longitudinal axis of the drum. The transceiver is further characterized by the provision of stylus retracting structure which effects disengagement of the stylus from a copy sheet when the access cover is opened for removing or installing copy paper. Stylus retraction or disabling is also accomplished when the carriage is manually moved or when the transceiver is placed in the send mode of operation.

3,735,041

CABINET FOR ELECTRONIC COMMUNICATIONS APPARATUS

Ryuzo Fujita, Suidobashi Bldg., 4-4, 1-chome, Hongo, Bunkyo-ku, Tokyo, Japan

Filed July 6, 1971, Ser. No. 159,594
Int. Cl. H04n 5/64
U.S. Cl. 178—7.9 8 Claims



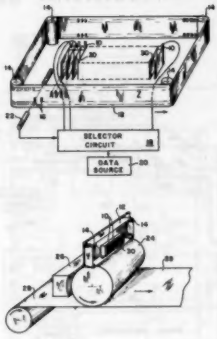
A generally ball-shaped enclosure is formed by two complementary separable portions having appropriately arranged cut out portions to receive and retain between them a control panel, loudspeaker mountings, and access plate when the portions are joined together without the use of additional fasteners.

3,735,042

DUAL PURPOSE CHARACTER GENERATOR

Kemal M. Aydin, and Lester L. Selnick, both of Stamford, Conn., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 26, 1971, Ser. No. 202,477
Int. Cl. H04l 15/34
U.S. Cl. 178—15 11 Claims



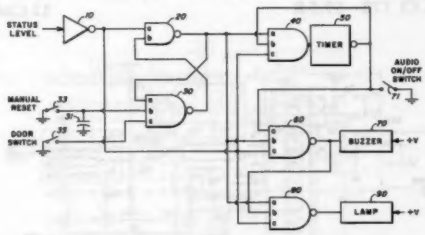
A dual purpose graphic form or character generator which can be used as a visual display or as a line printer when combined with any suitable image transfer process. Lines of print characters or other graphic signs or symbols are formed through an endless band by means of a plurality of light sources which are activated selectively with precise timing by means of an electronic selector circuit. The selector circuit determines the position of the characters with respect to the light sources and fires the light sources according to the information fed into it by a data source.

3,735,043

DATA TRANSMISSION SYSTEM INTERRUPTION MONITOR

Alton F. Riethmeier, Rochester, and Frank R. Fahey, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1968, Ser. No. 776,860
Int. Cl. H04l 25/02
U.S. Cl. 178—69 G 4 Claims



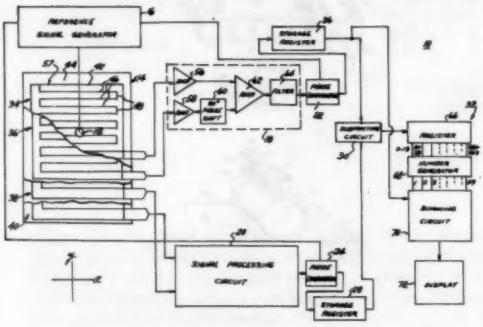
An end of transmission signal apparatus for indicating that a facsimile system or other data communication apparatus has ceased transmitting or receiving a message. By the means of logic and timing circuits, an audible and/or visual indication is provided upon detection of a completion of a message or that the data transmission system has ceased operating for any one of various reasons. The visual indication is a light which flashes alternately with the sounding of a buzzer.

3,735,044

COORDINATE DETERMINING DEVICE EMPLOYING A SLOWLY VARYING DIFFERENCE SIGNAL TO DETERMINE APPROXIMATE CURSOR POSITION

Ronald M. Centner, Southfield, and Vernon C. Kamm, Farmington, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed July 6, 1971, Ser. No. 159,899
Int. Cl. G08c 21/00
U.S. Cl. 178—19 8 Claims



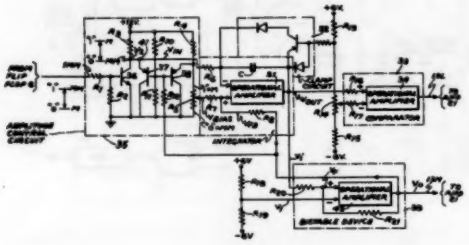
Cursor position is determined by providing two different signals that vary cyclically in response to cursor displacement. The first signal varies at a slightly faster rate than the second. Because of this small difference in the rate of variation of the two cyclic signals, the difference between the two signals varies at a rate substantially slower than the rate at which either of the two signals vary. The difference between the two cyclic signals provides an absolute or complete determination of approximate cursor position in a relatively long interval in which the two cyclic signals oscillate through many cycles. The value of this difference signal is measured to determine approximate cursor position.

3,735,045

FRAME SYNCHRONIZATION SYSTEM FOR A DIGITAL COMMUNICATION SYSTEM

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 24, 1970, Ser. No. 66,258
Int. Cl. H04l 7/08; H04j 3/06
U.S. Cl. 178—69.5 R 12 Claims



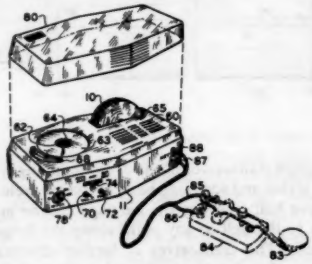
A framing control circuit for a frame synchronization system employing one integrator for both the sense and search modes rather than a separate integrator for each of the sense and search modes. A voltage controlled amplitude control circuit is disposed at the input to the integrator. The control signal for the control circuit is produced by a bistable device coupled to the output of the integrator. A low binary control signal, indicating a sense mode, provides a relatively low amplitude input signal to the integrator and, hence, an effective long time constant for the integrator. A high binary control signal, indicating a search mode, provides a relatively large amplitude input signal to the integrator and, hence, an effective short time constant for the integrator.

3,735,046

APPARATUS FOR SIMULATING, PRODUCING AND TRANSMITTING CODE SIGNALS

Russell H. Romney, 3259 Bon View Drive, Salt Lake City, Utah

Continuation-in-part of Ser. No. 38,382, May 18, 1970, Pat. No. 3,656,157. This application Aug. 27, 1971, Ser. No. 175,460
Int. Cl. H04l 15/02
U.S. Cl. 178—115 5 Claims



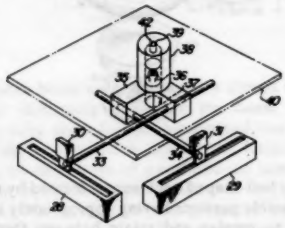
Code signals, such as alpha-numeric elements of the Morse International Code, are produced by rotating a disc member selected from a set bearing character elements represented by perforations in or printed circuit components on the disc. These signal components are sensed by detector means, electronic or mechanical, which are connected to an oscillator or equivalent tone generator and to a suitable amplifier or transmitter. Each separate disc bears a group of annularly spaced characters encoded for detection; a small group of discs thus contains the full code alphabet, including numerical and punctuation characters.

3,735,047

MEANS FOR INDICATING A BALANCED LISTENING POSITION FOR 4-CHANNEL STEREOPHONIC SYSTEMS

Toshio Kawada, Neyagawa-shi; Tadashi Torama, Higashisumiyoshi-ku, and Tamio Kobayashi, Hirakata-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 23, 1971, Ser. No. 183,012
Claims priority, application Japan, Sept. 29, 1970, 45/86017
Int. Cl. H03g 3/00
U.S. Cl. 179—1 GQ 3 Claims



A means for indicating a balanced listening position for four-channel stereophonic systems comprising a position in-

dicating mechanism adapted to be controlled in association with the manipulation of variable resistors for the adjustment of relative output levels between forward and backward speakers and between left and right speakers of a four speaker system to thereby indicate the position of balance of sounds from the four speakers.

3,735,048

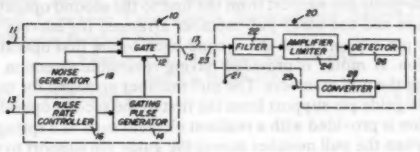
IN-BAND DATA TRANSMISSION SYSTEM

Stanley J. Tomsa, Chicago, and Bruce C. Eastmond, Westmont, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 28, 1971, Ser. No. 148,040

Int. Cl. H04m *1/06*

U.S. Cl. 179—15 BM **11 Claims**



An information transmission system for transmitting data signals simultaneously with audio signals in an audio channel includes a gate circuit at the transmitting unit for interrupting the transmitted audio at a rate controlled by the data signal, and a detector at the receiving unit for detecting the interruptions in the audio and reconstructing the data signal from the interruptions. The duration of the interruptions is selected to be short enough so as not to be readily detectable audibly. The system is suitable for use in a multiple radio-receiver system wherein signals are transmitted from spaced receivers to a central station with data signals indicating the quality of the signals received at each receiver.

3,735,049

TELECOMMUNICATION SYSTEM WITH TIME DIVISION MULTIPLEX

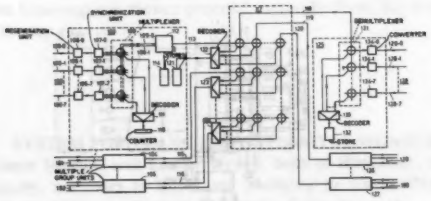
Robert Bertold Buchner, and Jan Philippus Maat, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1971, Ser. No. 126,150

Claims priority, application Netherlands, Apr. 10, 1970, 7005143

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 AQ **2 Claims**



A telecommunication system with time division multiplex wherein information signals in serial form are received, converted to parallel form in a plurality of shift registers, remultiplexed and transferred to an information storage unit under the control of a local clock pulse generator and a local address generator. An overflow detector generates an overflow signal in the event that the information signals are being received faster than they can be converted to parallel form and remultiplexed. In response to the overflow signal the address generator provides overflow addresses and the excess received information is transferred through an auxiliary transfer channel to the information storage unit.

3,735,050

ELECTRICAL STORAGE CIRCUIT

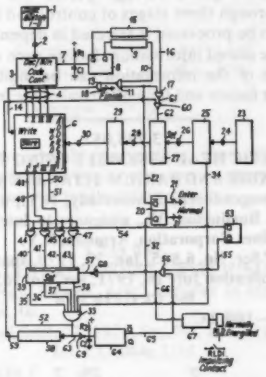
Alexis Mardas, London N. W. 2, England, assignor to Modern Telephones Limited, London, England

Filed July 16, 1971, Ser. No. 163,279

Claims priority, application Great Britain, July 21, 1970, 35384/70

Int. Cl. H04m *1/26*

U.S. Cl. 179—90 B **7 Claims**



An electrical storage circuit suitable for use as a repertory dialler in a telephone system in which the digits of a number to be dialled are stored at respective addressed locations in a coordinate store constituted by active bistable devices as four bit words, and words read out from the store are applied via an inverter to a four bit counter which is stepped until each stage is set at 1 in synchronism with an output from a pulse generator to give a digital output according to an addressed word associated with a particular digit of a stored number at a rate governed by the frequency and duration of the clock pulse output from the generator.

3,735,051

DIGITAL INFORMATION STORAGE UNIT HAVING PARALLEL STORES AND A CONTROL THEREFOR

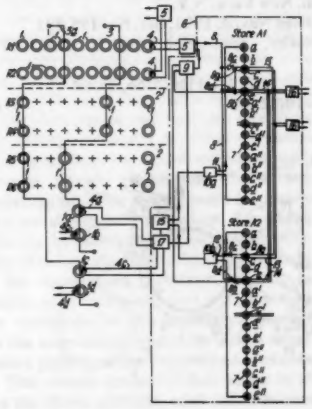
David Christopher Harms, Beeston, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Oct. 1, 1971, Ser. No. 185,561

Claims priority, application Great Britain, Oct. 2, 1970, 46,873/70

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 EB **11 Claims**



A digital information storage unit which has a particular but not necessarily an exclusive application in an electronic

telecommunication exchange system includes at least two stores arranged for parallel and substantially independent operation and a control unit for controlling the operation of the stores. When a digital information signal is applied to the storage unit input it is channelled to one of the stores, the other store is connected to the input and said one store is inhibited for a period determined by the signal storage period. When both stores are occupied the input is inhibited until one of the stores is cleared, the cleared store being connected to the input. During the storage period the information is processed through three stages of control and the store whose contents is to be processed is selected in dependence upon the nature of the stored information. Before each stage of control the progress of the information can be inhibited in dependence on the nature and time of arrival of the information.

3,735,052

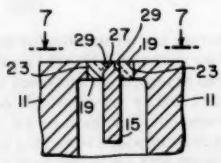
MAGNETIC HEAD ASSEMBLY USING TITANIUM DIOXIDE AND BARIUM TITANATE SLIDER

Helen M. Hoogendoorn, Schenectady, N.Y., and Charles M. McIntosh, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 6,865, Jan. 29, 1970, abandoned. This application July 16, 1971, Ser. No. 163,196

Int. Cl. G11b *5/14*

U.S. Cl. 179—100.2 C **2 Claims**



A magnetic head assembly includes a glass-gapped ferrite head bonded into a ceramic slider with a glass. The slider is made of a ceramic composition consisting essentially of the reaction product of 70 to 85 percent, by weight, titanium dioxide (TiO_2) and 30–15 percent barium titanate ($BaTiO_3$). Infrared bonding is employed. Copper may be introduced into the ceramic composition to enhance its infrared absorption properties.

3,735,053

RECORDING AND/OR PLAYBACK APPARATUS WITH TAPE ENGAGEMENT MEANS RESILIENTLY URGED TO AN OPERATING POSITION

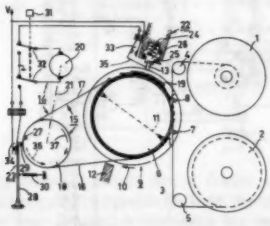
Walter Eibensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,391

Claims priority, application Austria, Nov. 17, 1970, 10329/70

Int. Cl. G11b *15/66, 23/04*

U.S. Cl. 179—100.2 ZA **4 Claims**



A recording and/or playback apparatus for recording and playing signals having a wide frequency spectrum from a tape-shaped record carrier such as video tape. The apparatus has a cylindrical drum about which the tape is to be wound for the recording and playing operation. A guide pin support member is arranged for pivotal movement about the drum between a first and second operating position and is provided with at least one guide pin for engaging the tape in the first operating position and when the guide pin support is pivoted to the second operating position the guide pin will engage the tape and wrap it about the cylindrical drum in a helical path. A stop member is mounted on the apparatus so as to define the second operating position and the guide pin support has a projection which will engage the stop member when the second operating position has been reached. A shifting device is provided to pivot the guide pin support between the operating positions and includes two pull members connected to the guide pin support, one of the pull members arranged for moving the guide pin support from the first to the second operating position and the other pull member arranged for moving the guide pin support from the second back to the first operating position. A motor is provided having reversible direction for driving the pull members. The pull member arranged for moving the guide pin support from the first to the second operating position is provided with a resilient element such as a spring so that when the pull member moves the guide pin support to the second operating position it will be resiliently urged against the stop member. Manually operable switch means are provided for initiating operation of the motor and additional switches are provided for turning off the motor when the guide pin support has reached either of its operating positions. The switch for turning off the motor when the guide pin support is moved to the second operating position is arranged so as to turn off the motor after the guide pin support has already reached the second operating position so that the support will be resiliently urged against the stop. Position retaining means are also provided so as to hold the guide pin support in either of its operating positions.

3,735,054

TAPE RECORDER-OPERATING DEVICE WITH AUTOMATIC EXCHANGE FROM REWIND OR QUICK FEED TO REPRODUCTION BY SENSING NONRECORDED SECTION

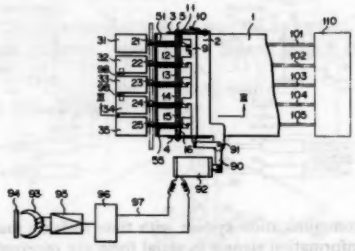
Kazuo Poshimura, Fuji, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 6, 1971, Ser. No. 159,670

Claims priority, application Japan, July 6, 1970, 45/58537

Int. Cl. G11b *15/44, 27/28*

U.S. Cl. 179—100.2 S **3 Claims**



A tape recorder-operating device, wherein a sound reproducing lever for bringing a drive mechanism to a sound reproducing state is coupled by a connecting member with a quick feed lever for bringing said drive mechanism to a quick feed state so as to be jointly operated with the latter lever; a first lock plate for locking the sound reproducing lever to an operable state and a second lock plate disposed above said first lock plate substantially in parallel relationship so as to

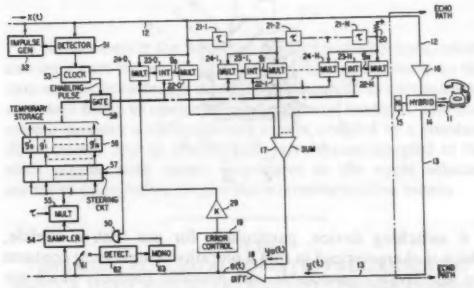
lock the quick feed lever to an operable state are so supported as to face both levers respectively; the first and second lock plates interlock each other only when the operations of both sound reproducing and quick feed levers are locked or released at the same time; there are provided detachable projections so as to cause the second lock plate alone to be actuated only when the operation of the quick feed lever is locked or released; and there is further provided plunger means for actuating the second lock plate so as to release the lock of the quick feed lever alone upon detection of a nonrecorded portion of the tape.

3,735,055

METHOD FOR IMPROVING THE SETTLING TIME OF A TRANSVERSAL FILTER ADAPTIVE ECHO CANCELLER

Edmond Joseph Thomas, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 5, 1971, Ser. No. 196,038
Int. Cl. H04b *3/22*
U.S. Cl. 179—170.2 **5 Claims**



The method disclosed accomplishes a reduction in the initial "distance" between the tap gain vector, of a transversal filter adaptive echo canceller, and its optimum value. The echo path bridged by the canceller is first interrogated with an impulse immediately after a connection is established. The impulse response of the echo path is sampled at the Nyquist rate, the samples are multiplied by a predetermined constant, and the weighted samples are stored. The respective gains of the tap components of the transversal filter are then set in accordance with the weighted and stored impulse response samples. Convergence thence proceeds naturally from this setting of the tap gain vector.

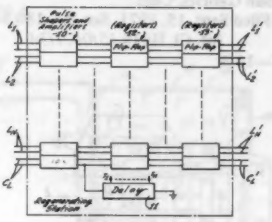
3,735,056

SYSTEM FOR TRANSMITTING DIGITAL SIGNALS

Helmut Martin, and Lothar Krisch, both of Hannover, Germany, assignors to Kobel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Mar. 6, 1972, Ser. No. 232,020
Claims priority, application Germany, Mar. 3, 1971, P 21 10 090.3; June 6, 1971, P 21 28 016.0
Int. Cl. H04l *25/02*
U.S. Cl. 179—170 E **5 Claims**

In a communication system for the transmission of digital signals and including plural stranded conductors, respective two conductors defining a single transmission path, the system further including signal regenerating stations, for regenerating the individual signals for improving the signal to noise ratio of the transmission system as a whole, the digital signals as transmitted including clocking signals, transmitted in one of the paths; means are included in the system for equalizing propagation phase differences in the signals of the transmis-



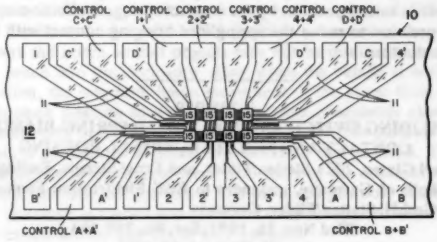
sion paths of the plurality as resulting from differences in length of twist of the several conductors as stranded, to be in phase synchronism at a regenerating station.

3,735,057

COMPENSATED CROSSPOINT SWITCHING SYSTEM

Anthony G. Bryan, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 27, 1971, Ser. No. 184,081
Int. Cl. H04q *3/50*
U.S. Cl. 179—186 F **13 Claims**



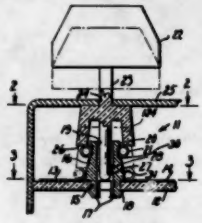
A crossoint switching circuit in which the transmission paths through the circuit are compensated such that the resistance from any input to any output is equal to the resistance from any other input to any other output. This is accomplished by varying the resistance of the metallization in the circuit according to a prescribed method. The varying of the metallization resistance is accomplished by varying the width and length of metallization from the output or input package pins to the circuit. This width variation either adds or reduces resistance to the particular switching path indicated by the prescribed method. The prescribed method entails ascertaining that set of transmission paths having a maximum of resistance between inputs and outputs, and thereafter systematically adding resistance to other transmission paths to bring their resistances up to this maximum without adding to the maximum already established. This is accomplished by first compensating those circuit paths having resistances next highest to the ascertained maximum. Thereafter all transmission paths are compensated in descending order. If there is no possibility of raising the resistance of a particular transmission path to the ascertained maximum without raising another transmission path resistance past the ascertained maximum, then the resistance of this particular transmission path is raised to the ascertained maximum which raises certain other transmission paths past the ascertained maximum by a certain amount. This certain amount if then added to all paths not affected by the above addition, such that a minimum resistance spread is achieved between the possible paths in the switching circuit network.

3,735,058

KEYBOARD PRINTED CIRCUIT SWITCH ASSEMBLY WITH AXIALLY MOVABLE COIL SPRING CONTACT AND ASSOCIATED KEY TYPE ACTUATOR

William A. Berry, Covina, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed Sept. 15, 1971, Ser. No. 180,665
Int. Cl. H01h 15/04, 1/34
U.S. Cl. 200—16 A 8 Claims



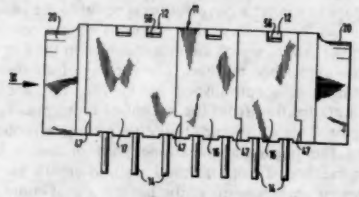
A key operated switch incorporated with a printed circuit board having conductors thereon and an upwardly extending conical post of non-conducting material between adjacent terminals of certain of the conductors. An expandable toroidal contact spring surrounds the post and is normally located above the conductors by virtue of its constriction against the conical surface. A depressible key member, which is normally held in raised position by the contact spring, is effective upon depression to move the spring into bridging contact with the conductors.

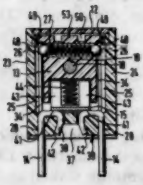
3,735,059

SLIDING SWITCH ASSEMBLY WITH SPRING-BIASED CONTACT AND MULTI-SECTIONAL HOUSING

Karl Glaser, 7021 Stetten/Filder, and Ernst Stengle, Esslingen, both of Germany, assignors to EBE Elektro-Bau-Elemente GmbH, Stetten/Filder, Germany

Filed Nov. 16, 1971, Ser. No. 199,193
Int. Cl. H01h 15/00, 9/02
U.S. Cl. 200—16 C 22 Claims





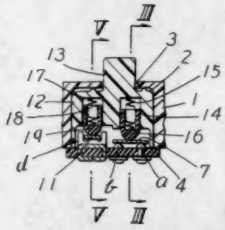
This invention relates to an electrical switch structure comprising a housing including a plurality of U-shaped housing structural elements arranged in side-by-side relationship, a plurality of slides adjustably arranged within the housing structural elements, each housing structural element being provided with at least one pair of contacts fixedly mounted therein, each slide being freely adjustable to any position in any of the housing structural elements, each slide adapted to engage only a single pair of contacts at any one particular position, and a removeable cover closing the interior of the housing.

3,735,060

LINEARLY MOVABLE ACTUATOR FOR SLIDE-PIVOT CONTACT ASSEMBLY IN SWITCH DEVICES

Yoshihiro Kawai, Nishi-ku, Nagoya, Japan, assignor to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gen, Aichi-ken, Japan

Filed Dec. 21, 1971, Ser. No. 210,368
Claims priority, application Japan, Dec. 28, 1970, 45/136604
Int. Cl. H01h 15/00, 19/00
U.S. Cl. 200—16 R 4 Claims



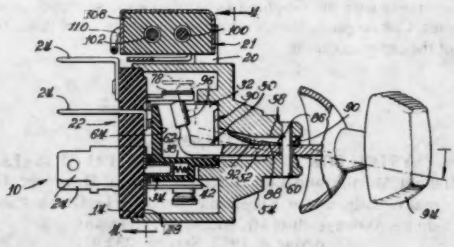
A switching device, particularly for use with a vehicle, which is characterized in that a plurality of stationary contacts are selectively connectable with movable contacts which are movable substantially in a vertical direction by means of a single actuating member.

3,735,061

ELECTRICAL SWITCH ASSEMBLY

Lucid Lincoln Byrd, Mount Prospect, Ill., assignor to Carter Precision Electric Company, Skokie, Ill.

Filed Dec. 16, 1971, Ser. No. 208,694
Int. Cl. H01h 15/00
U.S. Cl. 200—16 R 9 Claims



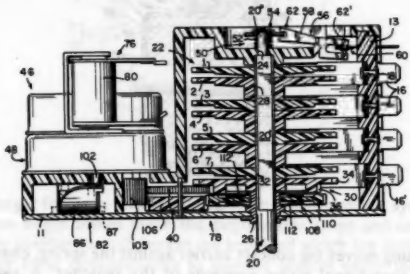
An electrical switch assembly having multiple on switch positions operated by an actuator lever and a pair of normally open switch contacts. One of the switch contacts is disposed along the path traced by the actuator lever in moving between the multiple on switch positions. Lever biasing means are provided to enable the actuator lever to be moved perpendicular to the switch path for closing the pair of switch contacts in any of the multiple on switch positions. A resistor subassembly encased in a heat conducting casing is mounted on the switch housing in a manner to provide a heat sink arrangement.

3,735,062

EXTENDED CYCLE TIMER WITH MOMENTARY SWITCH

Benjamin F. Chestnut, and Joseph E. Wiser, both of Indianapolis, Ind., assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 813,522, May 4, 1969, abandoned.
This application Aug. 19, 1971, Ser. No. 173,318
Int. Cl. H01h 43/00
U.S. Cl. 200—38 R 14 Claims



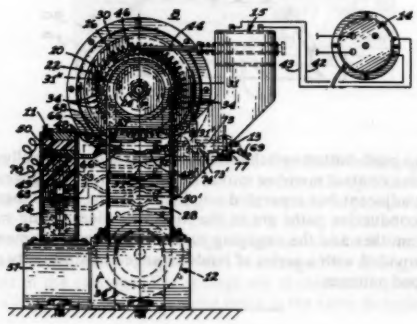
A timer wherein the "push or pull" of a shaft means, which carries a cam means for actuating switches responsive to the cam means, actuates an actuator means which in turn actuates a contact blade to open and close electrical contacts. The cam means includes a cycle selector means coupled to a constant drive means, and an intermittent drive means coupled to the shaft means, with means responsive to the cycle selector means to selectively energize the intermittent drive means.

3,735,063

TIME CONTROLLED AUTOMATIC PROGRAMMING DEVICE WITH ADJUSTABLE PINS ON PROGRAMMING DRUM AND ADJUSTABLE CONTACT ARRAY

Leonard R. Stillbert, 3218 W. State Avenue, Phoenix, Ariz.

Filed Mar. 28, 1972, Ser. No. 238,886
Int. Cl. H01h 43/10
U.S. Cl. 200—38 CA 5 Claims



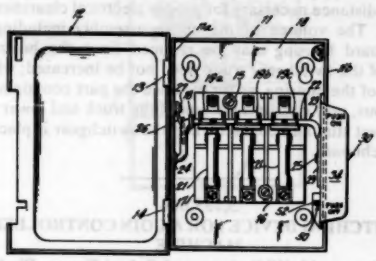
A programming device removably associated with television, radio, or any other similar receiver which may be manually, selectively adjusted to cause the receiver to automatically function to select particular channels at precise times of day or night. The programming device is also provided with an alarm or call component which functions in conjunction with the device to attract the viewer or listener's attention to a particular preset channel or program at a given time.

3,735,064

VOIDABLE COVER INTERLOCK

Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 24, 1972, Ser. No. 220,095
Int. Cl. H01h 9/22, 3/20
U.S. Cl. 200—50 A 9 Claims



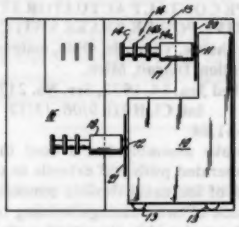
A switch enclosure having an openable cover and a handle operable externally of the enclosure for operating a switch therein, is provided with a voidable interlock that normally prevents opening of the cover when the handle is in the switch ON position. The interlock consists of a single screw mounted to the handle and movable therewith. Under normal operating conditions, with the handle in the ON position the screw blocks opening of the cover and in the handle OFF position the screw is aligned with a notch in the cover that provides clearance thereby permitting the cover to be opened. When the handle is in the switch ON position a formation thereof covers the notch so that objects may not be inserted through the notch into the enclosure. Also, when the handle is in ON position, the interlock limits movement of the cover from its fully open position to a partly rather than completely closed position and in this partly closed position it is not possible to apply a padlock to maintain the cover in this position. The head of the screw is accessible externally of the enclosure to permit operation of the screw to a retracted position wherein the interlock is voided and the cover may be opened whether the handle is in switch ON or OFF position.

3,735,065

LOW PROFILE CIRCUIT BREAKER WITH STAGGERED TERMINALS

Thomas F. Brandt, Jr., Swarthmore, and Philip C. Netzel, Milmont Part, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 26, 1971, Ser. No. 192,073
Int. Cl. H01h 33/66
U.S. Cl. 200—50 AA 8 Claims



Low profile high voltage truck mounted switchgear having upper back disconnect studs and contacts and lower back disconnect studs and contacts in which the lower back discon-

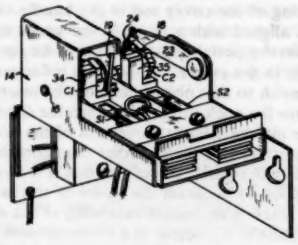
nect studs and contacts extend beyond the truck and the upper back disconnect contacts are stepped back toward or above the switchgear in the truck to produce the proper electrical clearance and spacing on a diagonal line in a vertical plane. This structure makes it possible to produce a low silhouette which may more readily be camouflaged for environmental beautification and obviates the need for spacing the axes of the upper and lower back disconnect studs by the full vertical distance necessary for proper electrical clearance and spacing. The volume of the entire assembly including the switchboard housing may be reduced since the horizontal length of the switchgear truck need not be increased; while a portion of the housing, as for instance the part containing the supply bus, may overlie a portion of the truck and lower back disconnect stud and contact when the switchgear is placed in the switchboard.

3,735,066

SWITCHING DEVICE FOR A COIN CONTROLLED MACHINE

Harry Greenwald, Whitestone, and Robert Tuppo, Elmhurst, both of N.Y., assignors to Walter Kiddle & Company, Inc., Clifton, N.J.

Filed Nov. 26, 1971, Ser. No. 202,506
Int. Cl. H01h *13/58*; **G07f** *5/10*
U.S. Cl. 200—52 R **8 Claims**



A switching device for a coin controlled machine in which a drive member, movable in unison with the coin slide, has two alternately selectable configurations for operating a pair of series connected switches that control the machine. In one configuration, the drive member displaces cams that actuate the switches to establish conduction through both switches after a given number of coin slide insertions. In the other configuration, the drive member engages contact members extending from the switches to establish conduction through both switches after a single coin slide insertion.

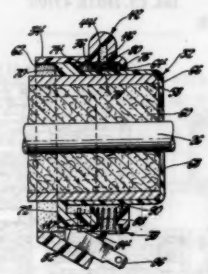
3,735,067

PISTON TYPE CONTACT ACTUATOR STRUCTURE FOR AUTOMOTIVE POWER BRAKE SWITCH ASSEMBLY

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1972, Ser. No. 217,805
Int. Cl. H01h *9/06*, *15/12*
U.S. Cl. 200—61.86 **2 Claims**

A power brake assembly has a boot through which the brake pedal operated push rod extends to control the power brake. Instead of the usual flexible convoluted rubber boot, the boot is made of two housings forming tubes or cylinders, one slidably located within the other, with the power brake piston extension containing the atmospheric air inlet filter extending into the inner housing. A switch mechanism is provided in the outer housing and includes a biasing spring acting on a switch contact carrier. The inner housing has a probe which engages the contact carrier so that in one slidable position of the inner housing relative to the outer housing the contact carrier is urged into position relative to other switch contacts so that the switch or switches comprising the switch mechanism have assumed positions, either open or closed, as desired. This occurs when the power brake piston has moved in the brake apply direction. When the power brake piston moves to the brake release position, the probe on the inner



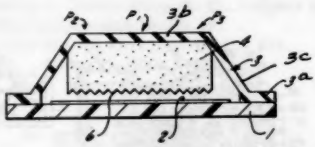
housing moves the contact carrier against the spring, changing the operational status positions of the switches. A vacuum control valve arrangement is also provided so that a port is closed or connected to atmosphere depending upon the position of the inner housing relative to the outer housing, if such a vacuum control is needed as, for example, in conjunction with a road speed control device.

3,735,068

PUSH-BUTTON SWITCH WITH RESILIENT CONDUCTIVE CONTACT MEMBER AND WITH HELICAL CONDUCTIVE NETWORKS

Makoto Yanaga, and Takemi Shimojo, both of Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1971, Ser. No. 172,765
Claims priority, application Japan, Sept. 26, 1970, 45/95870
Int. Cl. H01h *13/06*, *13/52*, *1/24*
U.S. Cl. 200—159 B **4 Claims**



In a push-button switch using an elastic and electrically conductive contact member movable into and out of engagement with adjacent but separated conductive paths on a substrate, the conductive paths are in the form of helices fitting within one another and the engaging surface of the contact member is provided with a series of lands arranged in a plurality of L-shaped patterns.

3,735,069

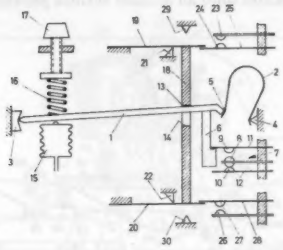
SNAP-ACTION ELECTRIC SWITCH

Jens Nicolai Andresen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 5, 1972, Ser. No. 215,488
Claims priority, application Germany, Feb. 12, 1972, P 21 01 195.0
Int. Cl. H01h *13/36*
U.S. Cl. 200—67 D **2 Claims**

The invention relates to a snap action switch assembly which in addition to the usual contact switch means has a mid-

dle or normal range bound by movable stops which movement is proportional to or determined by the amount of force applied thereto through an actuating lever. The actuating lever is not only acted upon by moderate forces in the usual way to provide the usual control but, in addition, is also acted upon

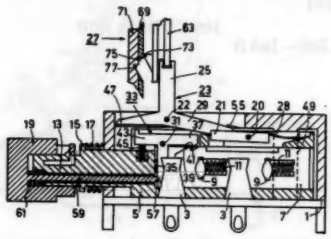


by larger forces in response to extreme conditions in a system. These larger forces move the displaceable stops and one or more auxiliary switch means are provided which are actuated under these circumstances to provide control under the extreme conditions referred to.

3,735,070
SWITCH

Harm Kreutzelman, and Laurentius Maria Verhoeven, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,861
Claims priority, application Netherlands, Nov. 21, 1970, 7017069
Int. Cl. H04h *15/18*
U.S. Cl. 200—78 **18 Claims**



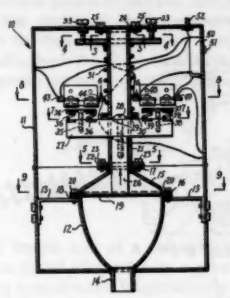
A switch comprises a housing having fixed switching contacts and a slidable carriage which is movable by a switch-on spring. The switch-on spring can be locked in place. A slide having moving switching contacts is also provided and is movable by a switch-off spring, which can also be locked. The slide having the moving contacts is arranged for sliding movement in the carriage. The springs are consecutively unlocked by a trigger mechanism moving twice in the same direction.

3,735,071
LOW PRESSURE CONTROL SWITCH WITH BRIDGING CONTACTS

George R. Burnett, and Jessie E. Burnett, both of No. 2 Pye Court, El Dorado, Ark.

Filed Dec. 6, 1971, Ser. No. 204,863
Int. Cl. H01h *35/34, 1/20*
U.S. Cl. 200—83 J **2 Claims**

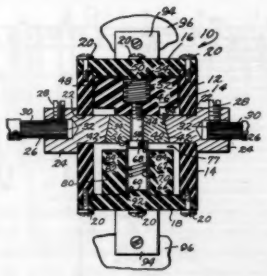
The present invention relates to a low pressure control switch for pump controls and includes a diaphragm actuated double contact switch for controlling both sides of the electric circuit. The diaphragm is spring returned and the spring tension can be adjustable to vary the low pressure at which the switch will break the circuit.



3,735,072
IMPACT-OPENING ELECTRICAL SWITCH WITH BREAKABLE FRANGIBLE ELEMENT

Robert C. Six, Jr., Route 1, Elliston, Va.

Filed Aug. 19, 1971, Ser. No. 173,222
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 R **7 Claims**



Primarily for automotive use between the battery and the electrical system, the switch includes two stationary contacts normally bridged by a movable contact. The movable contact is biased by resilient means toward an open condition, but is normally held closed by a frangible element designed to be broken by a breaker element upon a change in momentum equal to a preselected threshold level of e.g. 10 miles per hour. The switch is preferably interposed in the battery cable on the "hot" side and mounted on the vehicle near the battery, e.g. on an engine compartment wall.

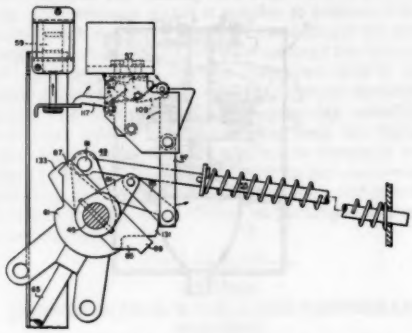
3,735,073
CIRCUIT INTERRUPTER WITH OVERCENTER SPRING CHARGING MEANS

Norman Davies, East Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1971, Ser. No. 203,216
Int. Cl. H01h *3/30*
U.S. Cl. 200—153 SC **9 Claims**

A circuit interrupter having stored energy overcenter spring

operating means for operating the interrupter between open and closed positions and having auxiliary spring closing means



for overcoming electromagnetic "blow-out" forces incurred by fault current.

3,735,074

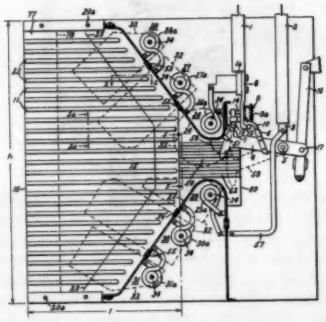
ARC CHUTE FOR AN ELECTRIC CIRCUIT BREAKER

Gerhard Frind, Schenectady, N.Y.; Richard M. Korte, West Chester, and John E. Zlupko, Philadelphia, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed July 14, 1971, Ser. No. 162,431

Int. Cl. H01h *33/08*

U.S. Cl. 200—144 C **16 Claims**



An arc chute for an electric circuit breaker comprises insulating sidewalls and plates, or fins, of insulating material that extend transversely of the sidewalls and have edges for engaging the arc as it moves into the chute. The sidewalls and edges of the plates are coated with a plasma-arc-sprayed refractory metal-oxide consisting essentially of amorphous fused silica.

3,735,075

ELECTRIC CIRCUIT BREAKER HAVING AN ARCING CONTACT WITH LARGER PIVOT NOTCH THAN PARALLEL MOVABLE CONTACTS

Alan Lister Kidd, Southport, England, assignor to Dorman Smith Switchgear Limited, Preston, PR2 2DQ, England

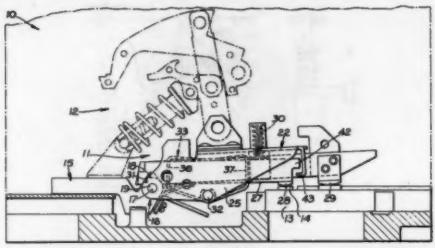
Filed Sept. 29, 1971, Ser. No. 184,799

Claims priority, application Great Britain, Oct. 29, 1970, 51,353/70

Int. Cl. H01h *1/54, 33/12*

U.S. Cl. 200—146 R **7 Claims**

An electrical circuit breaker or isolator, for switching currents of the order of 100,000 amperes, has for each pole thereof, a respective moving contact assembly comprising a plurality of parallel-connected movable contact arms each carrying a respective movable contact engageable with a fixed contact, said arms being of strip metal resiliently mounted side-by-side and substantially parallel to each other in a carrier, each said arm having a V-shaped notch adjacent one end whereby it locates onto an arcuate surface provided by a fixed



hinge contact block to which the carrier is hingedly connected, whereby electrical continuity is provided between the arms and the block by direct contact therebetween. An arcing contact arm present in the assembly has the angle of the V-shaped notch in the arcing contact different from that in the other arms to take account of the larger blow-off force occurring between the arcing contact arm and the arcuate surface.

3,735,076

ELECTRONIC MUSICAL INSTRUMENT KEY-OPERATED SWITCH ASSEMBLY HAVING VIBRATION-ABSORBER ATTACHED TO MOVABLE CONTACT MEMBER

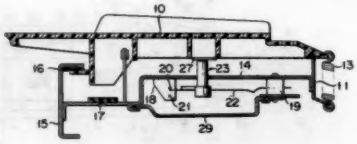
Masakatsu Iijima, Shizuaka-ken, Hammamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizvoka-ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,890

Claims priority, application Japan, Dec. 26, 1970, 45/131831

Int. Cl. H01h *1/50*

U.S. Cl. 200—166 D **12 Claims**



In a key-operated switch assembly having a movable and a stationary contact member, a soft shock or vibration absorbing member is attached to the movable contact member. The shock absorbing member is made of elastic or resilient material having greater shock or vibration absorbing capacity and is molded into one integral piece along with an actuator actuating the movable contact member. The shock absorbing member may be provided with a thin tongue-like projection extending toward the free end of the contact member so as to obtain a better shock absorbing effect.

3,735,077

ILLUMINATED MINIATURE SWITCH

Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 28, 1971, Ser. No. 184,394

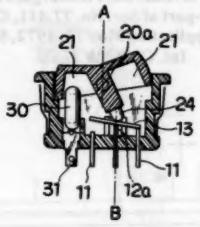
Claims priority, application Japan, Feb. 5, 1971, 46/5548

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 A **8 Claims**

An illuminated miniature switch which is switched ON or OFF by rocking motion of an actuator, wherein a projected

portion of the actuator is provided inclined relative to the side face of the body portion of the switch, and the fulcrum portion of a movable contact plate receiving element is offset from a straight line vertical to the bottom surface of the switch body



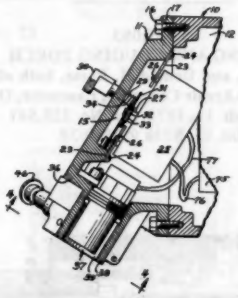
portion and passing through the axial portion of the actuator, whereby a space is formed in the opposite side from the offset position of the receiving element to dispose an illuminator such as a lamp, neon bulb or luminous diode therein, so as to illuminate the actuator from thereunder.

3,735,078

EXPLOSION PROOF BOX WITH DOOR MOUNTED SWITCH

Arthur I. Appleton, Northbrook; Duncan Turner, Des Plaines, and Robert J. Pastorel, Chicago, all of Ill., assignors to Appleton Electric Company, Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,670
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **9 Claims**



A rigid cast box has a rectangular flange encircling the box opening. A cover has a mating flange which is bolted to the box flange to define an explosion proof enclosure. The cover is also hinged to the box so that it will be supported when the bolts are removed. Attached to the inside of the cover is an electrical switch. A handle on the face of the cover is rotatable to actuate the switch. The cover also carries the socket of a mating plug and socket combination. An interlocking apparatus connects the socket and the switch handle so that the switch cannot be turned on without having the plug all the way in the socket and, when the switch is turned on, the plug cannot be removed from the socket.

3,735,079

SPRING CONTACT BLANK

Frank L. Dieterich, 3727 S. Robertson Boulevard, Culver City, Calif.

Division of Ser. No. 728,683, May 13, 1968, Pat. No. 3,579,822. This application Apr. 29, 1971, Ser. No. 138,824
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 F **6 Claims**

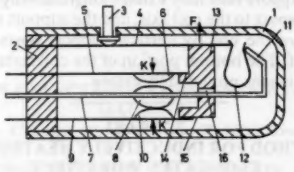
A contact strip blank of plural spring contacts from which individual spring contacts are severable. The blank has a plurality of side-by-side wire fingers joined at one end by a conductive, plated strip with the opposite finger ends extending in flexure relation therefrom. The free ends of the wire fingers are formed as radiused points of contact, and the blank is heat treated to develop hardness, wear resistance and spring characteristics in the fingers, and spring contacts of varying widths are severable from the blank by cuts in the direction of the fingers. In a preferred method, the blank is made by winding a substantial length coil of a single layer of fine, heat-treatable precious metal alloy wire on a generally cylindrical mandrel, masking spaced strips longitudinally of the wire coil, silver plating the wire coil between the masked strips, removing the strips and cutting the strip-plated wire band from the mandrel as a sheet, cutting the wire sheet in the middle of the plated and unplated strips to provide the strip blanks for the forming and heat treating steps.

3,735,080

SNAP-ACTION ELECTRIC SWITCH

Jens Nicolai Andresen, Damager 16, Nordborg, Denmark

Filed Jan. 5, 1972, Ser. No. 215,487
Claims priority, application Germany, Jan. 12, 1971, P 21 01 197.2
Int. Cl. H09h *13/36*
U.S. Cl. 200—67 D **3 Claims**



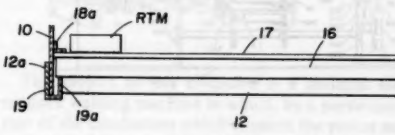
The invention relates to a snap action electric switch assembly in which the contact system is completely separated from the snap action system. The separation feature allows adjustments of the snap action system without affecting other properties of the switch.

3,735,081

RUN TIME METER INSTALLATION FOR MICROWAVE OVENS

George C. Foerstner, Amana, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Sept. 20, 1971, Ser. No. 182,019
Int. Cl. G04b *5/20*; **H05b** *9/06*
U.S. Cl. 219—10.55 **1 Claim**



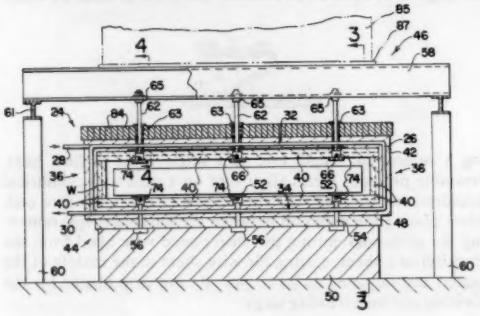
A microwave oven for rental installations is provided with a run time meter which cumulatively records the periods of time during which the oven is in operation. The run time meter is hidden behind a grille at the front of the oven, the grille being removable for access to the meter upon removal of a hidden Allen headed screw.

3,735,082

INDUCTION HEATING COIL SUPPORT

Robert J. Kasper, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 2, 1972, Ser. No. 222,827
Int. Cl. H05b *5/18*
U.S. Cl. 219—10.79 **16 Claims**



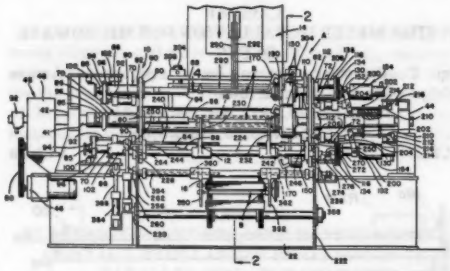
An induction heating coil support is disclosed which includes overhead support rails and tie rods interconnecting the support rails and an upper portion of the coil in a manner whereby the latter portion of the coil is supported in suspension with the axis of the coil horizontal. The coil includes axially spaced apart convolutions and the tie rods extend downwardly between adjacent convolutions and are interconnected with guide rail means disposed within the coil so as to engage the inner surface of the upper portion of the coil. The overhead support rails may extend longitudinally or transversely with respect to the coil axis, and the support rails are supported above the coil by vertical support posts at opposite ends thereof. The bottom portion of the coil rests on underlying support means provided therefore.

3,735,083

METHOD FOR INDUCTIVELY HEATING AN ELONGATED WORKPIECE

Richard F. Seyfried, Parma Heights, and Norbert R. Balzer, Parma, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 884,492, Dec. 12, 1969, Pat. No. 3,648,995. This application Jan. 10, 1972, Ser. No. 216,642
Int. Cl. H05b *5/02*
U.S. Cl. 219—10.41 **4 Claims**



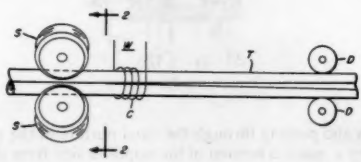
An apparatus for inductively heating an elongated workpiece preparatory to quench hardening, employing means for conveying the workpiece along a path, a single turn inductor positioned adjacent this path for inductively heating the elongated workpiece, as a unit, while it is being rotated, means for shifting the induction heating means away from the workpiece to clear the workpiece for movement along the path, and means for subsequently quench hardening the workpiece.

3,735,084

METHOD OF CONTROLLING THE QUALITY OF SEAM WELDED PRODUCT

John M. Urbanic, Pittsburgh; D. Marshall Fox, and Frederick C. Panian, both of Lower Burrel, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 77,411, Oct. 20, 1970, abandoned. This application May 11, 1972, Ser. No. 252,306
Int. Cl. B23k *31/06*
U.S. Cl. 219—67 **3 Claims**



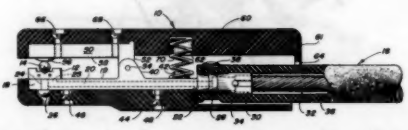
A method of controlling the quality of a product having a weld seam extending longitudinally thereof, the seam being progressively produced by a welding arc generated across adjacent edges of product stock as the stock travels past a welding station, and as the edges are forced together at a location downstream from the welding station. The method includes the steps of continuously measuring a plurality of critical welding parameters as the seam is being formed, and identifying for rejection the lengths of the product welded when any one or group of the welding parameters deviate from limits predetermined for the parameters. By this method confidence levels of 99.95 percent, soundly welded product are obtained.

3,735,085

CUTTING AND GOUGING TORCH

Kenneth E. McCall, and Donald H. Reese, both of Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Feb. 11, 1972, Ser. No. 225,541
Int. Cl. B23k *9/00, 9/28*
U.S. Cl. 219—70 **6 Claims**



A cutting and gouging torch to be used in the air-carbon arc process. This low current capacity torch is ideally suited for use with electrodes of less than one-quarter inch in diameter and is readily fabricated, has fewer parts, and is relatively inexpensive to manufacture. The torch is characterized in that the members that insulate the operator from the current carrying members serve as the operative members for inserting or removing electrodes from the torch. A further feature of the new torch resides in the nozzle head acting as a valve to control the passage of the air therethrough.

3,735,086

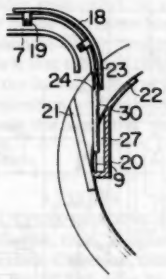
CIRCUMFERENTIAL ELECTROSLAG WELDING

Takeshi Wada; Hisanao Kita, and Michio Kitamura, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1971, Ser. No. 190,588
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **3 Claims**

Circumferential electroslag welding for jointing a pair of cylindrical members in which a water-cooled mold to be

removed after the start of welding is placed outside of the annular space formed between the members so that the deposit metal at the start zone is formed outside of the annular space and the tip of a welding wire is steadily guided through a consumable nozzle, the top end of which is electrically connected to the tip of a non-consumable nozzle in the start zone, said top end being partially cut off so that the consumable nozzle can be detached from said wire when said consumable nozzle is consumed to the point of the cut.



3,735,087

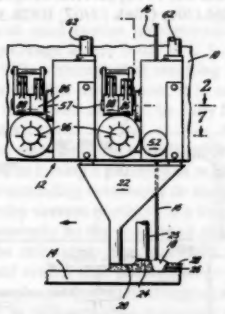
METHOD AND APPARATUS FOR ADJUSTABLE METERING

Roman F. Arnoldy, Houston, Tex., assignor to R. I. Patents, Inc., Houston, Tex.

Division of Ser. No. 849,020, Aug. 11, 1969, abandoned. This application Mar. 4, 1971, Ser. No. 121,220

Int. Cl. B23k *9/12*

U.S. Cl. 219—73 **23 Claims**



The present invention relates to metal metering methods and apparatus such as employed in welding equipment using granular material to form its weld bead; and more particularly, relates to such metering methods and apparatus and the controls therefor. The present invention encompasses the use of methods and control means to provide controlled rates of feed for the granular material, either based on the rate of feed of the electrode or on selected compositions for the weld bead. In addition to the basic method disclosed, a mechanical embodiment of the apparatus is shown which employs a rocker arm or arms and a linkage to transfer motion from a shaft connected to the electrode feed means to the metering wheel. Adjustment is provided for the rocker arm and linkage to adjust the amount of motion that is transferred to each individual metering wheel. An electrical embodiment of the apparatus is also disclosed and this utilizes two controls to limit the current flow to the metering wheel motors, one to adjust the current flow in relation to the rate of feed for the electrode and the second to provide individual control over individual motors, and in turn, over individual metering wheels. The present invention, therefore, provides method and means to give, not only synchronization of the granular feed with the electrode feed, but also over the composition of the total feed by controlling the rate of feed of the individual ingredients.

3,735,088

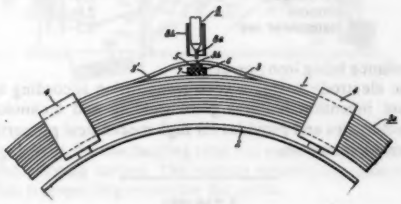
BRAZING METHOD AND APPARATUS

Homer H. Hall, Rome, Ga., assignor to General Electric Company

Filed Mar. 8, 1971, Ser. No. 121,685

Int. Cl. B23k *1/04*

U.S. Cl. 219—85 **8 Claims**



Joints in copper wire of electrical coil windings are brazed by applying a tungsten inert gas (TIG) torch on the upper side of the joint with a braze alloy arranged on the under side. A thermal shield, such as superposed asbestos and mica sheets, is arranged between the braze alloy and the underlying coil windings to protect the windings from the heat of the brazing process.

3,735,089

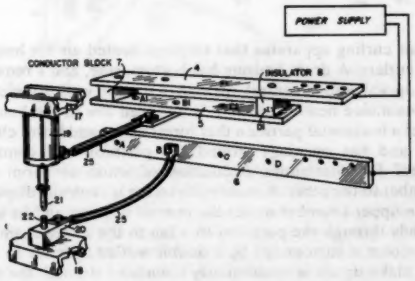
MULTIPLE ELECTRODE RESISTANCE WELDING MACHINE

David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed Nov. 5, 1971, Ser. No. 196,030

Int. Cl. B23k *9/28*

U.S. Cl. 219—87 **6 Claims**



The subject of this invention is a multiple electrode resistance welding machine in which, by a particular configuration of the conductors which connect the power supply to the several welding positions, the DC resistance and the inductance of the circuit between the power supply and each of the welding guns is made constant. Through the use of the novel arrangement of secondary circuit conductors, the total resistance and the inductors in all of the circuits is the same so that the welding current and wave shape is the same in all of the secondary gun circuits and the weld quality at all of the welding points is uniform.

3,735,090

FLUX CORED TUBULAR ELECTRODE FOR GAS SHIELDED ELECTRIC-ARC WELDING

Igor Konstantinovich Pokhodnya, and Vladimir Nikolaevich Golovko, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarki imeni E. O. Patrona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed July 8, 1971, Ser. No. 160,918
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **2 Claims**

A continuous electrode for shielded-gas welding and building-up of steels consisting of a powdery core in a steel envelope, the core comprising taken in the following per cent by weight:

fluorite concentrate	15–26
marble	5.0–10
ferromanganese	4.5–6.5
ferrosilicon	1.0–3.5
alumina	2.0–6.0
manganese ore	0.5–1.5

the balance being iron powder.

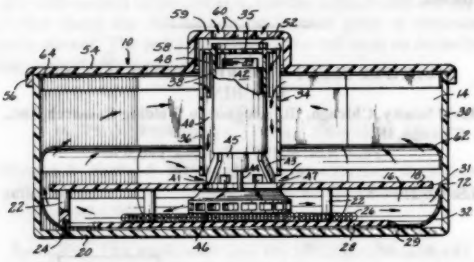
The electrode having a core composition according to the present invention features good welding and technological characteristics and provides for high mechanical properties of the weld joint metal.

3,735,091

ELECTRICALLY HEATED HAIR CURLING APPARATUS

Fred E. Baker, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 17, 1971, Ser. No. 209,192
Int. Cl. H05b *1/00*; F27d *7/04*; A45d *4/12*
U.S. Cl. 219—400 **5 Claims**



Hair curling apparatus that employs heated air for heating hair curlers. A drum housing has bottom, side, and a removable top wall with a central opening in the top wall. An electrical resistance heating element is disposed low in the housing under a horizontal partition that forms upper and lower chambers and has openings around the partition and centrally thereof for continuous circulation of warm air from one chamber to the other. A motor-driven fan is centrally disposed in the upper chamber under the central opening and its shaft extends through the partition to a fan in the lower chamber. The motor is surrounded by a double-walled cylinder so that cool make-up air is continuously circulated through the central opening over the motor while the warmed air is continuously recirculated in the housing over the curlers.

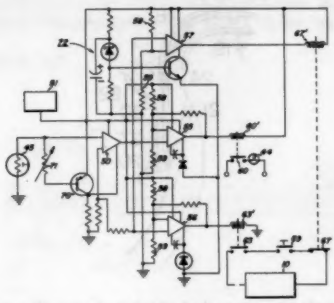
3,735,092

FUSER CONTROL CIRCUIT FOR COPYING APPARATUS

Robert L. Traister, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1971, Ser. No. 189,859
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **6 Claims**

An arrangement for controlling the fuser heat source in an electrostatic type reproduction machine to maintain fuser temperatures within a desired operating range and protect the reproduction machine in the event fuser temperatures become too high. The arrangement includes a thermistor to sense temperature conditions within the fuser, an amplifier to amplify the thermistor signal output to a level permitting relatively in-



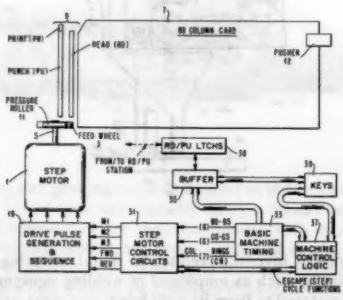
expensive switching devices to be used directly as fuser and reproduction machine controls without the need for relatively sensitive and correspondingly expensive intermediate comparator circuitry, and switching devices for operating the fuser heat source and controlling the reproduction machine in response to predetermined fuser temperature conditions.

3,735,093

STEP MOTOR AND CONTROLS FOR NON-OSCILLATING PUNCH/READ POSITIONING OF 80-COLUMN RECORD CARDS

Frank T. Kendall, Poughkeepsie; Donald L. Pierce, Hyde Park, and Walter J. Weikel, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,343
Int. Cl. B26f *1/04*; G06k *13/07*; H02k *37/00*
U.S. Cl. 235—61.1 **10 Claims**



A high precision high speed bidirectional step motor assembly, without gears or commutation, rapidly and precisely positions standard 80 column record cards without oscillation relative to a combined reading, punching and printing station of a card data recorder. Read cells and punch-print elements are separated by 2 units of card column displacement (2 × 0.087 inches). Four step drive excitation for the step motor (three drive pulses and one "hold" or "detent" pulse) is derived from pre-existing recorder circuits associated with buffer storage and logic sections. This permits reading, punching and printing operations to occur in synchronization with buffer and logic operations while card motion is definite-

ly stopped in the holding stage of the motor drive cycle. A pressure roller which engages the card with a feed wheel extension of the step motor is disengaged either manually or by operation of conventional registration mechanisms as the cards are fed to the initial registration position of the combined station (card column "0" under punch and print elements; column 2 under read cells). In read mode the first dummy cycle of step motor excitation backs up the card one column returning column 1 of the card to the read position. The advantage of this is that the read cells can be utilized in a dual mode to detect the leading edges of cards as a condition of the registration operation and to read card apertures. In punching-printing mode the usual first "dummy" cycle of forward stepping is taken.

3,735,094

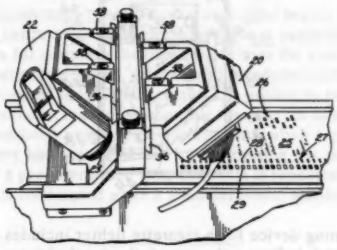
OPTICAL CODE READING SYSTEM

Robert A. Dunn, Willowick, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 50,129, June 26, 1970, abandoned. This application July 3, 1972, Ser. No. 268,409

Int. Cl. G06k *7/015, 7/10, 9/04*

U.S. Cl. 235—61.11 E **7 Claims**



An optical scan card reader incorporating substantially a dual electrical package as set forth in U.S. Ser. No. 11,613, filed Feb. 29, 1960. Although that teaching is not essential to an understanding of this description, it is referred to for the convenience of those who may not be fully familiar with such electronic systems.

This invention sets forth the coordination of a plurality of optical scan devices having a plurality of read heads aimed at a single strip area extending transverse to the path of travel of a document whereby various portions of a single document may be read simultaneously by the read head as those portions are positioned in the strip area. The invention further sets forth means to find and read a scan path wherever it is located on a document and a plurality of interchangeable light responsive means arranged in different predetermined arrays which may be selectively inserted in the read head to sense varying arrays of data carried on the document.

3,735,095

CARD ROUTING APPARATUS

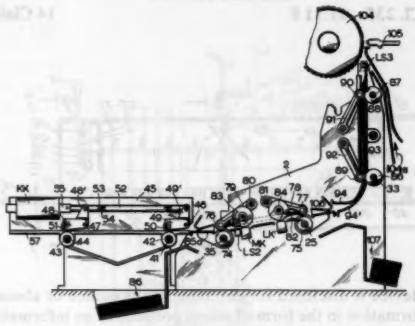
Gerhard Mutz; Bernhard Hettich, and Werner Moser, all of Villingen, Germany, assignors to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Division of Ser. No. 818,523, April 23, 1969, Pat. No. 3,614,094. This application Apr. 29, 1971, Ser. No. 138,669

Int. Cl. B65h *24/58;* **G06k** *3/00*

U.S. Cl. 235—61.9 R **11 Claims**

Cards are transported by reversible transporting means between an input station, a readout and recording station, and a printing station. Routing means are disposed between the input station, and the readout and recording station, for discharging returned cards, and other routing means are located between the readout and recording station, and the



printing station, for discharging read out cards which need not reach the printing station. The routing means cooperate with reversible transporting means for the cards.

3,735,096

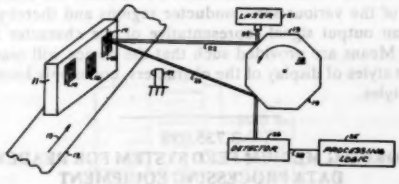
SYSTEM FOR PROCESSING CODED PULSE DATA

Ronald P. Knockeart, Walled Lake, and Frank A. Russo, Farmington, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 13, 1971, Ser. No. 207,150

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E **33 Claims**

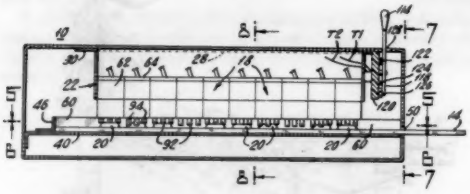


This invention is directed to a system for processing pulse information which is coded in binary, BCD, or some other type of pulse code. The information is coded into a polurality of active states which represent a series of functional operations. The functional operations occur in a specific sequence, and all operations occur several times before an output is generated. Accordingly, the system is capable of distinguishing each state and of either accepting or rejecting incoming data signals, depending upon the correspondence of the incoming signals with the defined operational functions. As each state is properly received, the system sequences to receive the next state. After a complete set of states is received, the data signals are stored and the remainder of the system cleared of all processing signals. The data received during the next complete series of states is compared with the prior data stored and, if a valid comparison results, a data ready signal generated. After a preselected number of valid comparisons are made the pulse code is accepted as valid and used to actuate a utilization device.

3,735,097
EMBOSSMENT READER

Richard A. Zeitlin, Pelham Park, N.Y., assignor to Autolectron Corporation, Mt. Vernon, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,734
Int. Cl. G06r 9/00
U.S. Cl. 235—61.11 F 14 Claims

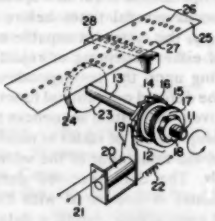


A device is disclosed for detecting the presence or absence of information in the form of raised portions of an information bearing medium with said device comprising sensor means movable between a first and second position in response to a raised portion of said medium being positioned there-beneath; and pressure sensitive responsive means responsive to said sensor means moving to a second position for producing an electrical signal indicative of the presence of a raised portion beneath said sensor means. A plurality of sensors are combined with an integrated circuit to form a character recognition module and a plurality of such modules provide a device which can directly read embossed cards, such as conventional embossed credit cards. Advantageously, the pressure sensitive responsive means which respond to the movement of each sensing element comprises a pressure sensitive semiconductor region which changes electrical states to indicate the presence of a raised portion of the character sensed beneath the associated sensor. In each character recognition module, the respective pressure sensitive semiconductor regions are formed (preferably by doping) in their character recognition pattern on a single integrated circuit chip providing both the normal pressure sensitive electrical characteristics and additionally mechanical orientation and stability. The chip also includes, as an integral part thereof, the necessary logic circuitry and internal connected conductors to decode the change of state of the various semiconductor regions and thereby provide an output signal representative of the character being read. Means are provided such that the device will read different styles of display of the characters, commonly known as font styles.

3,735,098
RECORDING MEDIUM FEED SYSTEM FOR READER OF DATA PROCESSING EQUIPMENT

Shinichi Hirata, Kohoku-ku, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 9, 1971, Ser. No. 170,090
Int. Cl. G06k 17/00; G11b 15/52; H04l 15/24
U.S. Cl. 235—61.11 R 10 Claims

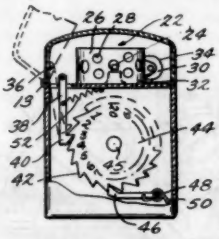


The feed of a recording medium is initiated by a drive means which is energized in response to a first readout instruction signal from a master such as a punch typewriter or electronic computer. Upon completion of transmission of one character data, a sync signal is mechanically generated and is compared with a second readout instruction signal from the master in a timing control circuit. When the sync signal is generated prior to the second readout instruction signal, the drive means is de-energized in response to the sync signal to thereby stop the recording medium and is again energized in response to the second readout instruction signal to thereby again initiate the feed. When the second readout instruction signal is generated prior to the sync signal, the drive means is kept energized even when the sync signal is generated so as to continue the feed of recording medium. The above cyclic operation is repeated in response to the succeeding readout instruction signals.

3,735,099
CIGARETTE LIGHTER

Harry C. Herr, 404 Willow Road, Savannah, Ga.

Filed Feb. 24, 1971, Ser. No. 118,459
Int. Cl. G06m 1/00; G09f 9/00
U.S. Cl. 235—91 R 6 Claims

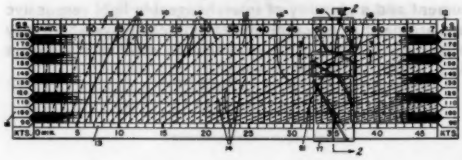


A warning device for a cigarette lighter includes a counter wheel which indicates the cumulative total of times the cover of the lighter has been opened to expose the flint and wick. Thus, the counter indirectly indicates the number of cigarettes consumed by the lighter's owner which acts as a device for discouraging smoking.

3,735,100
LINEAR DISTANCE-SPEED-TIME COMPUTER

Gilbert B. Wagenfeld, 30 Derwen Road, Bala Cynwyd, County of Montgomery, Pa.

Filed Aug. 19, 1971, Ser. No. 173,071
Int. Cl. G06g 1/16
U.S. Cl. 235—89 R 6 Claims

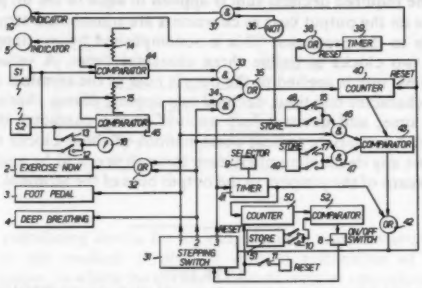


A computer for air navigation and the like having a distance scale for use with sectional maps drawn on a distance scale matching that of the computer, the said computer in addition to its said distance scale having coordinated ground speed and time scales and a pair of cursors which are not only shiftable relatively to one another but are also conjointly shiftable relatively to a main supporting member having said three scales marked thereon, thereby enabling an index point on one of said cursors to be brought into registry with intersecting graduation lines of any two of said scales, whereby any one of the three parameters of distance, ground speed or time may be readily determined where two of said parameters are known.

3,735,101
PHYSIOTHERAPY CONTROL DEVICE

John Stewart Simpson Stewart, 50 The Common, Parbold, Wigan, England

Filed June 22, 1971, Ser. No. 155,531
Claims priority, application Great Britain, June 23, 1970, 3,034/70
Int. Cl. G06m 3/02
U.S. Cl. 235—92 T 5 Claims

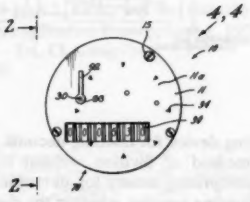


The physiotherapy control device described herein includes means for instructing a patient to perform a particular exercise, means for counting the number of times the exercise has been properly performed, and when a predetermined count has been reached for then instructing the patient to perform a different exercise, means for counting the number of times the exercise has been properly performed, and when a predetermined count has been reached for instructing the patient to rest. After a predetermined time the cycle is repeated and the operation is terminated after a predetermined number of cycles.

3,735,102
CLOCK FOR METERS

Joe H. Blancett, 4729 Jacksboro Highway, Wichita Falls, Tex.

Filed June 18, 1971, Ser. No. 154,342
Int. Cl. G06m 1/00
U.S. Cl. 235—94 R 4 Claims



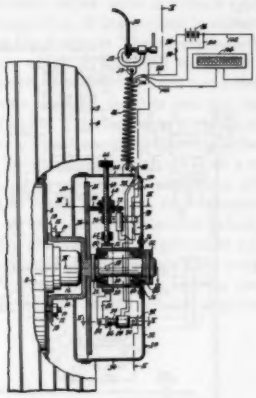
A rotatable shaft extends upwardly into the space between a pair of spaced holding members to rotate a plurality of horizontally and vertically positioned gear means which causes a indicator means to indicate the amount of fluid passing through a meter.

3,735,103
ODOMETER

Carl E. Finley, 401 East 4th Street, Lamar, Mo.

Filed Dec. 13, 1971, Ser. No. 207,258
Int. Cl. G01c 22/00
U.S. Cl. 235—95 R 4 Claims

An odometer for automotive vehicles consisting of a planar disc affixable to a wheel of the vehicle, concentrically therewith and parallel to the plane thereof, a roller carried rotatably on an axis radial to the wheel but not rotatable with the wheel, and frictionally engaging the disc whereby to be rotated on its axis as said vehicle travels, a mechanism operable to count and record the number of revolutions of the

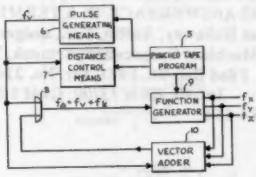


roller, and adjusting mechanism for moving the roller radially of the disc to engage and be actuated by different diameters of the disc, whereby to adjust the ratio of the rotative speeds of the vehicle wheel and the roller.

3,735,104
MAINTAINING DESIRED SPEED OF CUTTING TOOL IN NUMERICALLY CONTROLLED MACHINE TOOL

Per Harald Holmgren, Jonkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Sept. 13, 1971, Ser. No. 179,661
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 2 Claims

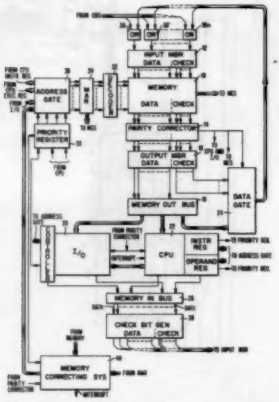


In a numerically controlled machine tool in which a fundamental pulse frequency determines speed of cutting tool motion along an axis, and pulses are distributed to axes according to programmed direction of cutting tool movement, successive pulses are counted into successive equal groups, each containing a number of pulses which is a multiple of the number of axes. The number of possible pulse distributions in a group is limited; hence an augmenting pulse frequency can be precomputed for each possible distribution, based on a relationship between total stairstep motion distance signified by pulses of the group and corresponding direct distance. For each group, pulses of the proper augmenting frequency are injected between pulses of the fundamental frequency so that for a given fundamental frequency speed in the same in any direction.

3,735,105
ERROR CORRECTING SYSTEM AND METHOD FOR MONOLITHIC MEMORIES

Gerald A. Maley, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 11, 1971, Ser. No. 152,324
Int. Cl. G11c 29/00; G06f 11/10
U.S. Cl. 235—153 AC 26 Claims

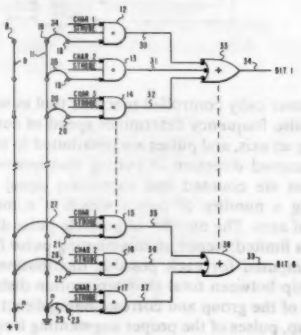


A memory correcting system in accordance with this disclosure is an integral part of a digital electronic computer having a monolithic memory. The memory correcting system detects, records and analyzes errors occurring during normal operation of the computer. Also, the memory correcting system systematically addresses the monolithic memory on a cycle stealing basis monitoring the general health of the monolithic memory. The systematic reading and writing of all monolithic memory locations prevents the accumulating effects of random errors. By detecting single errors as rapidly as possible, the probability of acquiring additional errors that are above the correcting capabilities of the redundancy code are avoided.

3,735,106
PROGRAMMABLE CODE SELECTION FOR AUTOMATIC ADDRESS ANSWERBACK IN A TERMINAL SYSTEM

John Thomas Hollaway, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,266
Int. Cl. H03r 13/00; G06f 5/02
U.S. Cl. 235—154 8 Claims

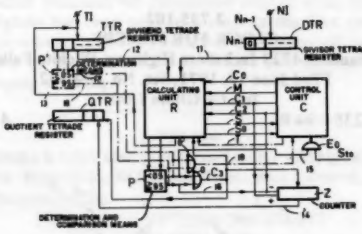


An automatic terminal identifying system is provided which allows a terminal to respond with decimal weighted identity codes upon receipt of an identification query from a processor. To develop the identity characters the total decimal equivalent sum for each bit position of the unique identifying binary codes assigned to a terminal is determined with a binary 1 in bit 1 of character 1 given a decimal value of 1; a binary 1 in bit 1 of character 2 given a decimal value of 2; a binary 1 in bit 1 of character 3 given a decimal value of 4, etc. For three characters logical signals are generated from two clocks which are applied by means of jumpers to the output buss of the terminal such that the logical signal representative of the required decimal sum is applied to each of the bit positions on the output buss as characters are transmitted sequentially to the processor. This is accomplished by overlapping the two clocks to define three character times. A value of decimal one is applied to the output buss of the terminal during character one time; decimal two applied during character two time; and decimal four applied during character three time. Appropriate logical combinations of these clocks thus allows any decimal numbers zero through seven to be applied by means of the jumpers to the output buss of the terminal.

3,735,107
CODED DECIMAL DIVIDER WITH PRE-CONDITIONING OF DIVISOR

Durk Jan Bolt, and Jogchum Reitsma, both of Beekbergen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,979
Claims priority, application Netherlands, Jan. 30, 1971, 7101258
Int. Cl. G06f 7/52
U.S. Cl. 235—159 3 Claims



A calculating device for dividing decimal numbers according to the method of division without restoration of the remainder, comprising means for determining, prior to the start of the dividing process, whether the divisor digit present in the tetrade of the highest order less one of the divisor tetrade register (a 0 is present in the divisor tetrade of the highest order) is smaller than 5. If this is the case, these means produce a command for multiplying the dividend and the divisor, such that, said divisor digit becomes larger than or at least equal to 5. The said means provide a shift command during the dividing process, so as to shift the remainder present in the calculating unit over a number of digit tetrades of a higher order, this number being at least equal to one, in the dividend tetrade register, and for storing a corresponding number of quotient digits in the quotient digit tetrade(s) of the lowest order in the quotient tetrade register. The said number of digit tetrades is determined by the number, or number reduced by one, respectively, of zeros or nines of the remainder which preceeds the number <5 or ≧ 5, or ≧ 5 or <5, respectively. A modification of the device enables direct and automatic formation of the correct quotient digits.

3,735,108
CODED DECIMAL NON-RESTORING DIVIDER

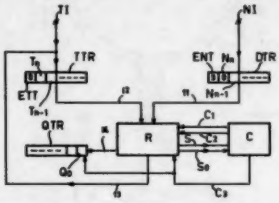
Durk Jan Bolt, and Jogchum Reitsma, Beekbergen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,980

Claims priority, application Netherlands, Jan. 30, 1971, 7101257

Int. Cl. G06f *7/52*

U.S. Cl. 235—159 **1 Claim**



A calculating device for dividing decimal numbers according to the method of division without restoration of the remainder, in which the dividend tetrade register comprises an additional tetrade in the location whose order is one higher than the location of the dividend digit of the highest order, and in which a 0 is stored prior to the start of a division. The divisor tetrade register comprises an additional tetrade in the location of the highest order which is a 0, a digit 9 being permanently stored in the latter additional tetrade. In a calculating unit the contents of said additional tetrades are normally included in the subtract and add operations. The correct quotient digits are then automatically produced, said digits being stored, in reaction to a shift command, in the quotient tetrade register each time that the dividend or remainder passes through 0. The shift command, moreover, ensures that the remainder is shifted into the dividend tetrade register in a location of the next higher order.

3,735,109
SYSTEM FOR DISCOVERING A CRITICAL PATH IN A NETWORK

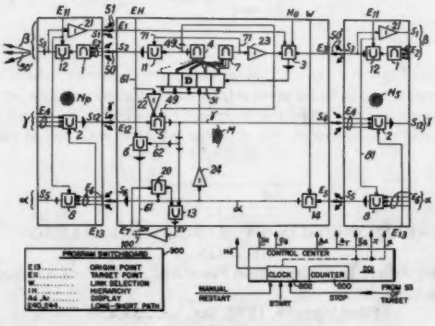
Jacques Berthelemy, Thorigny; Pierre Germain R. Boue, Butte Montceau, and Jacques Louis Sauvan, Paris, all of France, assignors to Societe Anonyme: Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed June 1, 1971, Ser. No. 148,835

Claims priority, application France, June 1, 1970, 7020051

Int. Cl. G06g *7/48, 7/50*

U.S. Cl. 235—185 **17 Claims**



A plurality of node elements are interconnected by link elements together with an appropriate control center for simulating or modelling a network. Three categories of lines interconnect and pass through the node elements. One, a β chain conveys signals from node element to node element via respective link elements in a direction through the network. A second, a γ chain conveys signals in the direction opposite to the direction of the β chain. The third, an β chain conveys signals in the same direction as the β chain and effectively forms a validation in the network-modelling circuit which is necessary for operation of the corresponding β chain. Signals are advanced stepwise under supervision of a clock (part of the control center). Energization of the γ chain is initiated at the end of the advance of the β signals. The network-modelling circuit includes a circuit which is arranged to detect amongst the several link elements connected to each node element the first one, or the last one, or both the first and last ones which are reached by the β signal. This detection is employed to progressively validate the γ line. Loops are detected either by exciting signals in the α chain before β excitation from a target point of the network and interrupting the excitation after α signals have progressed as far as they can, or alternatively by artificially rendering all the γ lines conductive before β excitation and exciting the γ chain from a target point and then interrupting the γ excitation after γ signals have progressed as far as they may. In either case the loops and the parts of the circuit downstream of the loops remain capable of passing signals.

3,735,110
DIGITAL SINE/COSINE GENERATOR

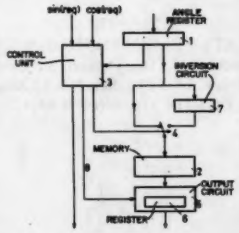
Corstiaan LeComte, Hilzen, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Oct. 14, 1971, Ser. No. 189,211

Claims priority, application Netherlands, Oct. 19, 1970, 7015266

Int. Cl. G06f *15/34;* **G06g** *7/22*

U.S. Cl. 235—197 **9 Claims**

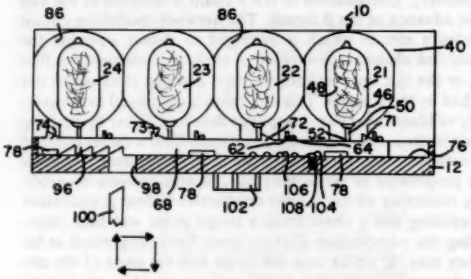


In a sine/cosine generator the angular value written into an angle register, is directly supplied to a memory (ROM), if either the sine of an angle located in the first or third quadrant, or the cosine of an angle in the second or fourth quadrant must be determined. The value is supplied in inverted form to the memory, if either the sine of an angle located in the second or fourth quadrant, or the cosine of an angle located in the first or third quadrant must be determined. The memory contains the sine values of a discrete number of angular values to be offered by the angle register. Furthermore, the sine/cosine generator comprises various logic circuits to minimize the memory capacity to be used, and to place the sine and cosine values, obtained by the memory and provided with a sign bit, in a register which is part of an output circuit.

3,735,111
SELECTIVE ACTUATING MECHANISM FOR PERCUSSIVE PHOTOFLASH LAMP ARRAY

John W. Shaffer, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 12, 1972, Ser. No. 261,588
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 15 Claims

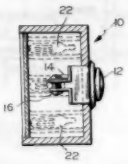


For a photoflash assembly comprising a plurality of percussively-ignitable flashlamps mounted on a base and arranged in a linear array with respectively associated reflectors and preenergized striker springs, a selective actuating mechanism for sequentially releasing the striker springs to fire respective flashlamps in response to successive indexing. The selective actuating mechanism comprises a slidable bar retained in a longitudinal channel in the base and having a number of linearly spaced projecting ramps. The lamps and striker springs are mounted in a row parallel to the channel with the strikers projecting over the bar to lie in the path of travel of the ramps. Linear indexing of the slidable bar along the channel causes one of the ramps to release a striker. A detent retains the position of the bar after each indexing cycle, and the sequence of releasing the strikers in response to successive indexing is programmed by the number and respective location of the ramps along the length of the bar.

3,735,112
ILLUMINATED ELECTRONIC DOORBELL

Rikk Harrison Randel, 7403 Insey Street, S.E., Berkshire, Md.

Filed Nov. 24, 1970, Ser. No. 92,390
Int. Cl. F21v *33/00*; H05b *41/42*
U.S. Cl. 240—2 S 1 Claim

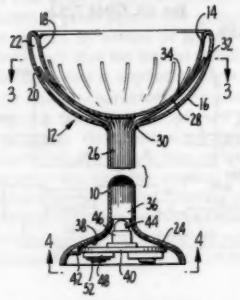


An electronic doorbell being illuminated by a series of five or six neon tube relaxation oscillator circuits disposed about a pushbutton doorbell and which provide illumination for seeking out said doorbell.

3,735,113
OPTICAL DISPLAY

Thomas H. Stott, 72 Kathryn Drive, Pleasant Hills, Calif.

Filed Apr. 18, 1972, Ser. No. 245,210
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 G 5 Claims

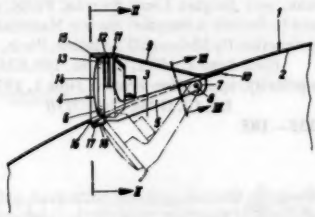


A visual display is disclosed in the form of a wine glass having a hollow stem, a doubled walled bowl with an interior chamber communicating with the stem and a bundle of optical fibers extending through the stem into the chamber where the terminal ends of the bundle are spread out by the chamber walls. A removable light, switch and battery package is mounted in the base of the glass for shining light into the fiber bundle.

3,735,114
HEADLIGHTS FOR VEHICLES

Ferdinand Alexander Porsche, 7031 Doffingen, Germany, assignor to Firma Dr. Ing. h. c. F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed July 13, 1971, Ser. No. 162,128
Claims priority, application Germany, July 15, 1970, P 20 34 997.7
Int. Cl. B60q *3/00*
U.S. Cl. 240—7.1 8 Claims



A headlight for vehicles, especially motor vehicles, which is constructed so as to be pivotal from an operating position into an opening of the body; the opening is covered by means of a part made from stretchable material which is retained at the body.

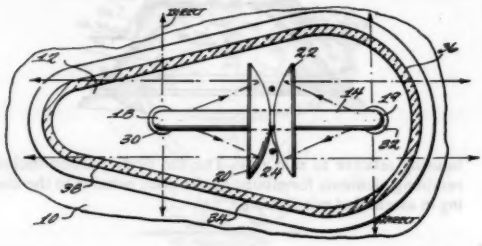
3,735,115
STREAMLINED GAS DISCHARGE ANTICOLLISION BEACON

Charles Adler, Jr., 1506 Sutton Place Apt., 1111 Park Avenue, Baltimore, Md.

Filed Mar. 16, 1972, Ser. No. 235,436
Int. Cl. B64d *47/02*
U.S. Cl. 240—7.7 6 Claims

A streamlined, gas discharge, anti-collision aircraft beacon for high speed aircraft which is adapted for mounting on an external portion of the aircraft, and which includes a generally

inverted U-shaped gas discharge tube to provide light through 360° in a horizontal plane and 180° in a vertical plane. Two concave reflectors positioned concentrically with the horizontal elongated portion of the gas discharge tube so as to increase the intensity of light projected in the fore and aft directions of an airplane. An aerodynamically streamlined design light transmitting cover over the reflectors and gas discharge tube is provided to reduce aerodynamic drag on the aircraft.

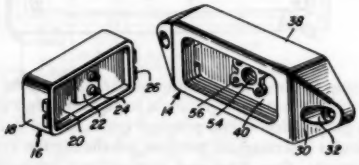


3,735,116

RAIL MOUNTED SIDEMARKER AND CLEARANCE LIGHT

Charles R. Morrison, Frewsburg, N.Y., assignor to Truck-Lite Co., Inc., Jamestown, N.Y.

Filed Nov. 9, 1971, Ser. No. 197,073
Int. Cl. B60q *1/32*
U.S. Cl. 240—8.2 **7 Claims**



An elastomeric lamp base fastened to a vehicle body surface seals a protective cavity into which conductors extend. Conductive contact elements embedded in the base body for electrical power and ground paths from different terminal socket locations adapted to accommodate different types of lamp units. A resilient rim on the base releasably holds the lamp unit firmly seated in the base with the lamp terminals received in the appropriate socket formations.

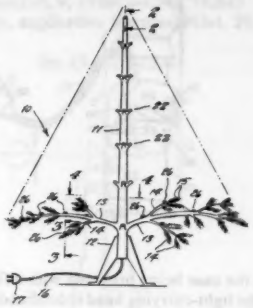
3,735,117

ELECTRIFIED PLASTIC CHRISTMAS TREE

John W. E. Hunt, Norway House, Manitoba, Canada

Filed Mar. 9, 1972, Ser. No. 233,073
Int. Cl. A47g *33/06, 33/16*
U.S. Cl. 240—10 T **1 Claim**

An artificial christmas tree having an electrical circuit built into it so to eliminate dangling wiring hanging visibly from the tree branches; the tree including a tree trunk supported at its lower end on a tree stand, a series of sidewardly radiating tree branches supporting twigs with needles, and the trunk and branches having electrical wiring therewithin leading from a transformer in the tree stand to electric lamp sockets scattered upon the twigs and branches, the transformer being connected by an extension cord and plug to an electric power source of a house.

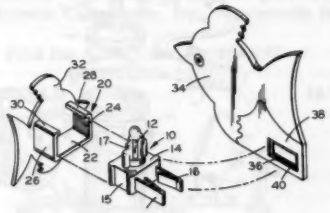


3,735,118

DECORATIVE SUPPORT AND METHOD OF MOUNTING

Robert L. Martin, Cranston, and Lawrence P. Mellyn, Glocester, both of R.I., assignors to General Electric Company

Filed June 23, 1972, Ser. No. 265,683
Int. Cl. F21s *1/00*
U.S. Cl. 240—10 R **4 Claims**



A guide light having an electrically connected low level light source and power blades supported in an insulating casing is made decorative by the mounting to the casing of the guide light a frame for support of decorative elements and by supporting decorative elements from this frame. The frame has side and bottom walls in the form of a stirrup conforming to and embracing the casing of the guide light. The frame extends between a forward and rear decorative element. The frame and forward and rear walls together comprise a cup in which the casing is held and from which the light source and power blades extend.

3,735,119

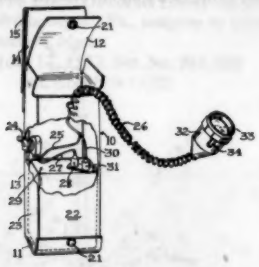
PORTABLE ELECTRIC FLASHLIGHT

Edgar L. Williams, Jr., 20015 Michigan, Apt. 22B, Chicago, Ill.

Filed Mar. 24, 1971, Ser. No. 127,565
Int. Cl. F21l *7/00, 15/14*
U.S. Cl. 240—10.6 R **1 Claim**

A portable electric flashlight in which the light-carrying head is connected by a flexible conductor cable to a power source within a case, the power source being controlled by a switch and the case having a loop for the reception of the belt

of a person carrying the case, the light-carrying head being capable of being confined in the case in the upper portion



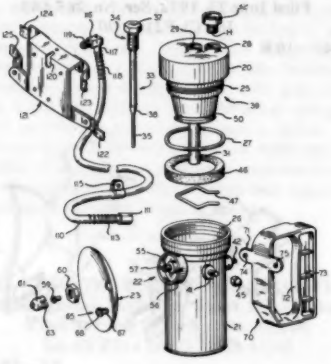
thereof and the case being provided with a flap for closing the case when the light-carrying head is confined therein.

3,735,120

MODULARLY CONSTRUCTED PLASTIC CARBIDE LAMP

Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.

Filed Jan. 5, 1972, Ser. No. 215,577
Int. Cl. F21l *7/00*
U.S. Cl. 240—11.1 **6 Claims**



A modular plastic carbide lamp includes upper and lower containers or housings with a water control needle valve therebetween. When the needle valve is opened, water drips from the upper container upon calcium carbide in the lower container, to generate acetylene gas therein. The acetylene gas rises in the lower chamber to a burner tip, at which the gas burns. These lamps are made from standardized modules which may be assembled in a great variety of arrangements and forms to make many different types of carbide lamps.

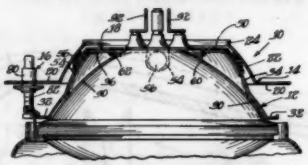
3,735,121

HEADLAMP BEARING

Joseph H. Jaeger, Indianapolis, Ind., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 188,047
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.6 **9 Claims**

A bearing element having a relatively thin, flat plate-like body and leg-like members extending from the apices of the body. Each of the leg members having convexly curved bearing surfaces, the legs and bearing surfaces adapted to be positioned between a headlamp housing and a mounting ring of the ball-and-socket type to provide ease of adjustment of said



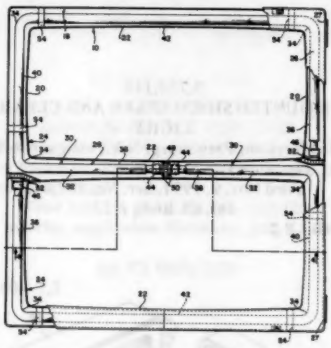
housing relative to said ring. The flat body portion includes retaining elements for mounting the body relative to the housing in assembled relationship.

3,735,122

LAMP FIXTURE AND FLUORESCENT LAMP THEREFOR

Joseph A. Ebin, Los Angeles, and John W. Logan, Hollywood, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 78,093, Oct. 5, 1970. This application Sept. 25, 1972, Ser. No. 291,541
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.12 **12 Claims**



A lamp fixture and a complementary fluorescent lamp having a tube with three right angle bends defining a pair of mutually perpendicular end portions and a pair of mutually perpendicular intermediate portions paralleling the end portions respectively. One tube end portion and its parallel intermediate tube portions have substantially equal lengths. The remaining tube end portion has a length approximately one half that of its parallel intermediate tube portion such that each lamp has a G shape. A pair of such lamps may be arranged in side-by-side inverted relation with the shorter end portions of the lamp tubes disposed end-to-end and electrically connected through their adjacent end terminals to form a fluorescent lamp assembly having a generally figure-eight configuration. The complementary lighting fixture comprises a reflector housing containing and conforming in shape to the fluorescent lamp assembly.

3,735,123

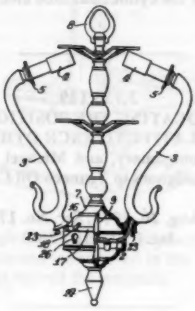
FOLDABLE CHANDELIER

David H. Porter, Fort Atkinson; Wayne Kemmerer, Jefferson, and Douglas Bray, Fort Atkinson, all of Wis., assignors to Thomas Industries Inc., Fort Atkinson, Wis.

Filed Dec. 27, 1971, Ser. No. 212,242
Int. Cl. H02g *3/20*
U.S. Cl. 240—78 F **10 Claims**

A chandelier has arms which fold up for ease in shipping and storage. The hub portion, to which the arms are attached,

consists of a cylindrical portion which is held by an upper and a lower shell. Each arm has two lugs, one of which engages a slot in the upper shell and an other which engages the lower



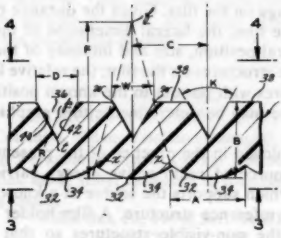
shell when the upper and lower shell, with the cylindrical portion therebetween, are brought together to lock the arms to the hub.

3,735,124

PRISMATIC LENSES FOR LIGHTING FIXTURES

Leo G. Stahlhut, Kirkwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 5, 1971, Ser. No. 169,303
Int. Cl. F21v *5/04*
U.S. Cl. 240—106 R **19 Claims**



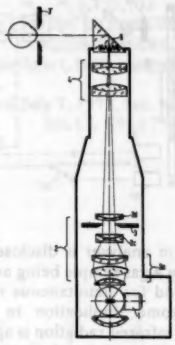
A prismatic lens for an overhead lighting fixture is formed from a transparent material and has a lower face composed of a plurality of arcuate surfaces arranged side-by-side. These surfaces form convex magnifying segments or lenticules in the lens. The opposite or upper face is composed of a plurality of V-shaped depressions extending downwardly from a generally flat intervening surface. The depressions are located behind and centered relative to the arcuate surfaces, whereas the intervening surfaces are positioned directly behind the junctures of adjacent arcuate surfaces. The prismatic lens diverts light rays emanating from a light source behind it primarily into zones disposed oblique to the lens so that the intensity of illumination is minimal in the reflected glare zone located directly beneath the lens and in the direct glare zone located generally to the side of the lens, but is maximum in the oblique zones located between the reflected and direct glare zones. This distribution provides the most pleasant and comfortable illumination for most visual observations performed beneath the fixture.

3,735,125

SLIT LAMP

Karl-Heinz Wilms, Munich, Germany, assignor to Optische Werke G. Rodenstock, Munich, Germany

Filed Oct. 9, 1970, Ser. No. 79,547
Claims priority, application Germany, Oct. 29, 1969, P 19 54 312.5
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **7 Claims**



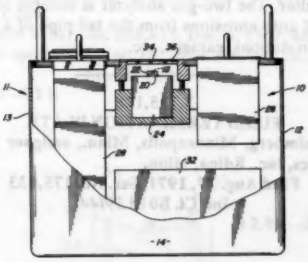
A slit lamp in which a telecondenser is connected behind the incandescent lamp which consists of several positive and at least one negative lens element whereby a slot diaphragm is arranged close to the last negative lens of the telecondenser.

3,735,126

METHOD AND APPARATUS FOR TESTING ROCK COAL DUST

Karl J. Casper, Cleveland Heights, Ohio, assignor to Reuter-Stokes Electronic Components, Inc., Warrensville Heights, Ohio

Filed Jan. 8, 1971, Ser. No. 104,937
Int. Cl. G01n *23/10*
U.S. Cl. 250—43.5 D **16 Claims**



A method and apparatus for determining the percentage incombustibles in a rock coal dust mixture by irradiating a sample of rock coal dust with gamma radiation from a collimated source spaced from the sample and measuring the backscattered radiation at an area behind the source. The sample of rock coal dust has a depth of about 2 inches to the entering gamma rays in order to minimize any changes in the count rate due to sample depth and density. Time is measured for detection of a predetermined number of radiation counts as a measurement of the percentage of incombustibles.

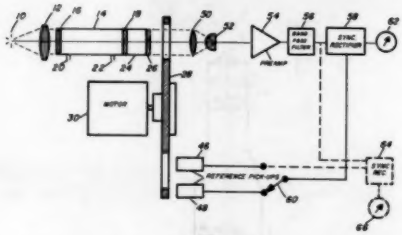
The apparatus includes a source of radiation collimated by a lead holder to irradiate a sample of the mixture of rock coal dust. The lead holder is centered on a detector's area of sensitivity to give significant count rates with relatively small sources of radiation.

3,735,127

INFRARED TWO GAS ANALYZER

Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Sept. 15, 1971, Ser. No. 180,583
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 R 8 Claims



A radiation absorption analyzer is disclosed for the measurement of two gases in a gas sample being analyzed utilizing the same equipment, and for simultaneous measurement of the two gases with some duplication in the electronic processing. A source of infrared radiation is applied through a sample or absorption cell containing the gas to be measured, and through a rotating optical filter wheel onto an infrared detector. The filter wheel contains two analytic filters passing absorption regions of the gases desired to be measured, and two reference filters in non-absorbing regions. Two reference pickups are utilized, which generate two signals as the filter wheel rotates, which are out of phase with each other by 90°. The signals from the detector and from the reference pickups are fed to a synchronous rectifier which rejects signals 90° out of phase with the reference signal, thereby providing a rectified output representing the quantity of gas in the sample cell under test. A switch may be utilized to apply the reference signals to a single synchronous rectifier, or a separate synchronous rectifier and meter may be utilized, with the reference pickups applied one to each channel for providing simultaneous two-gas analysis.

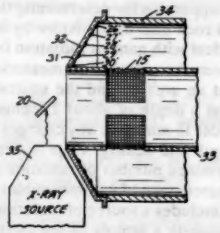
The two-gas analyzer is provided with aperture trimming to radiometrically balance each analytic filter with respect to its reference filter. The two-gas analyzer is suitable for the measurement of auto emissions from the tail pipe of a car for use in inspection stations, garages, etc.

3,735,128

FIELD TERMINATION PLATE

Paul W. Palmberg, Minneapolis, Minn., assignor to Physical Electronics, Inc., Edina, Minn.

Filed Aug. 27, 1971, Ser. No. 175,633
Int. Cl. B01d 59/44
U.S. Cl. 250—49.5 C 14 Claims



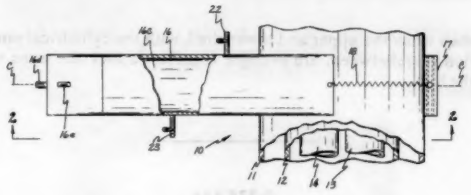
Field termination plates for cylindrical electron analyzers are provided wherein the plates are constructed of an insulative material coated on the interior surface with a high resistance, electrically conducting coating. Spaced concentric rings of relatively high conductivity material in electrical contact with said coating are provided; the rings providing equipotential regions on the plates, thereby minimizing field fringing near the ends of the cylindrical tube electron analyzer.

3,735,129

METHOD FOR LOCATING THE POSITION OF MEMBERS RELATIVE TO EACH OTHER

James William Montgomery, and Michael D. Reifel, both of Houston, Tex., assignors to Tenneco Oil Company, Houston, Tex.

Filed Aug. 20, 1971, Ser. No. 173,535
Int. Cl. G01n 23/02
U.S. Cl. 250—65 8 Claims



Energy from a point source is directed through a plurality of non-visible structures having known dimensions in a given plane. Variations in the density of the material traversed by the energy vary the intensity of the energy reaching a photographic film. Within the plane including the energy source and the film, the distance from the source to each of the structures determines the lateral dimensions and the relative position of the structure's image on the film. Given the distance between the source and the film, the lateral dimensions of the structures and the lateral position, size and intensity of the image cast by each of the structures on the film, the relative location of all such structures with respect to the known position of a reference structure may be determined either graphically or mathematically.

The device employed in the practice of the present invention includes a source of radio active energy carried in a camera housing which supports the source at a known, fixed distance from the reference structure. A film holder mounts the film behind the non-visible structures so that energy emitted from the source travels through the structures before striking the film. A small aperture in the camera housing focuses the energy causing it to radiate from a point. In use, the housing is flooded with water, lowered below the water surface and positioned about a subsurface well structure. The water in the housing is replaced with air after the housing is in place to reduce energy attenuation caused by the water.

3,735,130

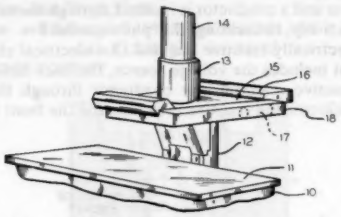
DIAPHRAGM-TYPE HIGH SPEED SPOT FILM DEVICE

John W. Bock, Greendale, and Marvin L. Sivertsen, Milwaukee, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed July 27, 1971, Ser. No. 166,394
Int. Cl. G01n 21/34, 23/04; H01j 37/22
U.S. Cl. 250—66 9 Claims

Radiographic film is transported intermittently between a pressure-producing diaphragm and a platen, each of which has an x-ray fluorescent screen on its face. The diaphragm constitutes a wall of a chamber which is subject to being depressurized when the film is in transport and to being pressurized

when the film is in radiographic position. The film contact pressure chamber is supplied and exhausted through flexible hoses which lead to a stationary pump. The pump has a



chamber and a diaphragm which is displaced in one direction to generate pressure and is retracted in the other direction by an electromagnet to relived the pressure.

3,735,131
FLUORESCENT PENETRANT COMPOSITION AND METHOD

Amos G. Sherwin, 8330 Gainford St., Downey, Calif.

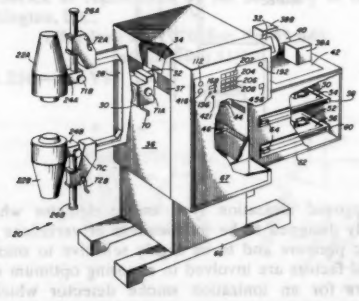
Filed Jan. 27, 1972, Ser. No. 221,403
Int. Cl. G01n *21/16*
U.S. Cl. 250—71 T **5 Claims**

An Oil-Base Water-Absorbing Fluorescent Dyestuff Carrying Fluid used for testing metal which not only locates surface defects such as cracks but distinguishes between flaw depths and, consequently, flaw relevancy by means of combining different color water-soluble and oil-soluble fluorescent dyestuffs is disclosed in this invention. A process step in the use of this fluid is water washing of the surface to remove fluid which has not become entrapped in a surface discontinuity. During this step, fluid entrapped in shallow defects absorbs a relatively high percentage of water which activates the water-soluble dyestuff while fluid in deep defects remains substantially water free and the water-soluble dyestuff remains substantially inactive. Thus, shallow defects fluoresce the color of the water-soluble dyestuff and deep defects fluoresce the color of the oil-soluble dyestuff.

3,735,132
RADIOGRAPHIC DISPLAY SYSTEM

Sergio Colombo, Milan; Vitaliano Carugati, Cologno Monzese; Gianni Ferramola, Milan; Sergio Ferrari, 5 Cernusco sul Naviglio, all of Italy, assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 16, 1970, Ser. No. 81,214
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 S **10 Claims**

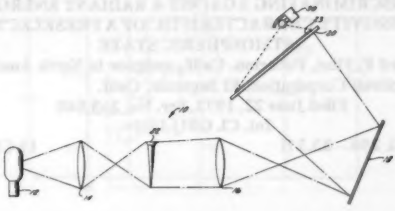


A nuclear imaging device comprising a plurality of scanning heads spaced apart in a predetermined configuration with the aid of a support member that permits the individual scanning heads to scan in parallel, antiparallel, and tomographic modes. The support member which is driven in both X and Y directions is mechanically connected with the stylus of a graphical X–Y plotter via a backlash linkage. Displays are provided wherein the color of the ink dot on printed paper or the intensity of the light projected on photographic film are related to the nuclear particle count in a preselectable manner.

3,735,133
REAR SCREEN PROJECTION DEVICE PROVIDED WITH LUMINOUS MARKINGS

James E. Fox, Northport, N.Y., assignor to Diamagnetics, Inc., Freeport, N.Y.

Filed July 7, 1971, Ser. No. 160,365
Int. Cl. G01d *7/06*
U.S. Cl. 250—72 **3 Claims**

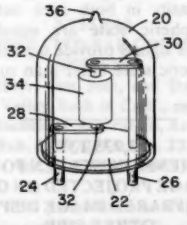


An improved rear screen projection device is disclosed. The projection device includes a front mounted source of non-visible light directed at indicia or reference markings on the screen. The markings are formed from a luminous paint or ink which glows under the nonvisible light thereby enabling the visibility of the markings to be vastly improved without effecting the resolution of the projected image. The ink is transparent or translucent so as not to interfere with any portion of the projected image.

3,735,134
THERMOLUMINESCENT RADIATION DETECTOR

Arthur C. Lucas, Goleta, Calif., assignor to EG & G, Inc., Bedford, Conn.

Continuation of Ser. No. 688,615, Dec. 6, 1967, abandoned. This application Apr. 10, 1970, Ser. No. 28,168
Int. Cl. G01t *1/11*
U.S. Cl. 250—71 R **2 Claims**



Radiation detector having hot-pressed thermoluminescent material disposed in close proximity to a heater element, both supported by electrical connecting pins passing through a base of a glass envelope enclosing the same in a gaseous environment of high thermal conductivity or of an open glass cylinder leaving the same exposed in an air environment. Combination may be heater wire threaded through cylinder of hot-pressed thermoluminescent material or flat planar heater and planar chip of hot-pressed thermoluminescent material.

3,735,135

NEUTRON DETECTOR OF THE TRACK-DAMAGE TYPE

Francois Jean-Marie Bredoux, Vincennes; Claude Andre Mercier, Fontenay sous Bois, and Georges Achille Philpot, Paris, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,727
Claims priority, application France, Nov. 4, 1969, 6937866
Int. Cl. G01t 5/00, 3/00
U.S. Cl. 250—83.1 10 Claims

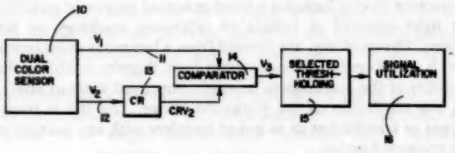
A neutrographic product comprising a recorder layer capable of undergoing selective radiation-damage and a converter layer comprising a composition dispersed in a binder, said composition being capable of producing a nuclear (n, alpha) reaction.

3,735,136

DUAL COLOR RADIOMETER METHOD SELECTIVELY DISCRIMINATING AGAINST A RADIANT ENERGY EMISSIVITY CHARACTERISTIC OF A PRESELECTED ATMOSPHERIC STATE

Edward F. Flint, Fullerton, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed June 22, 1972, Ser. No. 265,840
Int. Cl. G01j 3/02
U.S. Cl. 250—83.3 H 11 Claims



A dual color radiometer method for detection and discrimination of radiant energy emissivity characteristics of preselected atmospheric states. The dual output signals from the radiometer and corresponding to a respective first and second atmospheric spectral sample in a preselected spectral region, are differentially combined, one of the spectral sample signals being compensatorily gain changed such that the component signal intensity in both such output signals for a preselected atmospheric state are equal. Thus, the differentially combined signals provide a resultant signal indicative of an atmospheric state other than such preselected atmospheric state.

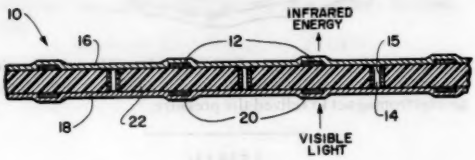
3,735,137

LARGE, TWO DIMENSION, SCREEN FOR CONVERTING AN OPTICAL IMAGE PROJECTED ON ONE SIDE TO AN IDENTICAL INFRARED IMAGE DISPLAY ON THE OTHER SIDE

Vincent T. Bly, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 2, 1972, Ser. No. 249,572
Int. Cl. G01j 1/02
U.S. Cl. 250—83.3 HP 12 Claims

A screen panel having conductive lattices, such as a copper plate, juxtaposed on each side of a dielectric substrate. The back side of the substrate and the conductive lattice thereon is covered with some photoconductive material, such as cadmium sulphide. The front side of the substrate and the conductive lattice thereon is covered with an infrared emitting substance of electrically resistive material having a high thermal emissivity, such as resistive black or a carbon slurry paint. A power supply is connected across the lattices on each side of the substrate and a conductor is inserted through the substrate for conductively connecting the photoconductive material and the electrically resistive material. An electrical circuit is formed that includes the voltage source, the back lattice, the photoconductive material, the conductor through the substrate, the electrically resistive material, and the front lattice,



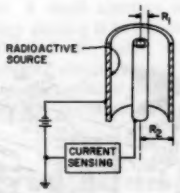
all connected in series. Light intensity, according to an image pattern projected on the back of the panel, lowers the electrical resistance of the photoconductor material. Lowering of the resistance in the photoconductive material causes increased current flow in the electrical circuit, and thus through the electrically resistive material on the front of the panel. Increased current flow in the electrically resistive material causes a temperature increase therein, and thus a pattern of infrared energy is emitted from the resistive material on the front of the panel in proportion to the visible light displayed on the back of the panel.

3,735,138

IONIZATION SMOKE DETECTOR

Gerald D. Rork, Bloomington, Minn.; Alfred S. Schlachter, Paris, France; Frank N. Simon, Bloomington, and Robert A. Stryk, Edina, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 27, 1971, Ser. No. 192,827
Int. Cl. G01t 1/18
U.S. Cl. 250—83.6 FT 2 Claims

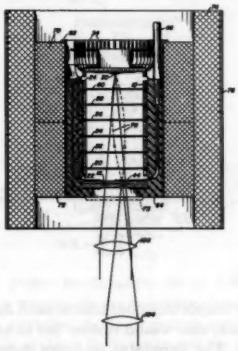


An improved ionization type smoke detector which is specifically designed to be independent of variations in atmospheric pressure and to be highly sensitive to smoke. A number of factors are involved in choosing optimum design parameters for an ionization smoke detector which has minimum sensitivity to pressure and which also has a maximum sensitivity to the presence of smoke. Several equations are described which aid in the design.

3,735,139
PHOTO DETECTOR SYSTEM WITH DUAL MODE CAPABILITY

Andrew Kalitinsky, La Jolla, and James W. Crooks, Jr., San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Apr. 7, 1972, Ser. No. 241,932
Int. Cl. H01j *31/26, 31/50*
U.S. Cl. 250—213 VT 34 Claims



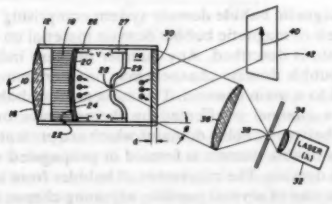
A photo detector system is described which has dual modes of operation under both dim and bright illumination conditions. Optics image incoming illumination directly upon an array of semiconductor detector diodes as well as upon a photo cathode. When bright light is present the optical image is focused upon the diode detector array and no high voltage is applied to the photo cathode. The light will not damage the photo cathode since the high voltage is off. Also, no electrons are accelerated toward the photo diode detectors. Thus, during bright light operation, the signal current is caused primarily by the direct effect of light on the diode detectors.

In dim light, high negative voltage is applied to the photo cathode and the optical image is focused on the photo cathode. The electron optic design causes the electrons emitted from the photo cathode to be imaged onto the same diode detectors that are used during bright light operation. These electrons strike the detectors with a high velocity induced by the applied voltage. The signal current due to this electron bombardment is therefore many times greater than the current due to the dim light striking the diodes directly. Detector response to dim levels of illumination is thus increased while retaining normal operational capability under bright illumination conditions.

3,735,140
LOW LIGHT LEVEL LASER IMAGING SYSTEM

Morton Stimler, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1970, Ser. No. 49,640
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT 7 Claims

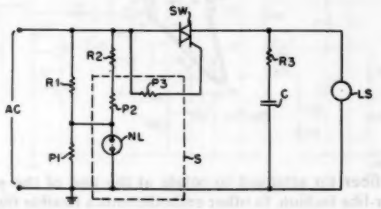


A low light level imaging system having an image intensifier which utilizes a semiconductive material. A photoemissive material emits spatially modulated electrons in response to a detected image to spatially modulate the reflectivity of the semiconductive material. A laser beam from a laser located external to the image intensifier is reflected from the modulated semiconductor reflector to provide an image on a screen.

3,735,141
ELECTRONIC LIGHTING CONTROL RESPONSIVE TO AMBIENT LIGHT

Thomas E. Beling, Saxonville, Mass., assignor to Sigma Instruments, Inc., South Braintree, Mass.

Filed Sept. 1, 1971, Ser. No. 176,808
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 R 19 Claims



In the disclosed control, a light source is turned on and off bistably in response to ambient light. To do this, a photoresistor or photocell, whose resistance increases with decreasing light, is exposed to the ambient light. The photoresistor or cell forms part of a voltage-energized voltage divider, and is connected across a neon lamp from which the cell is shielded. When the ambient light is sufficiently dim the lamp is lit. The current through the neon lamp is intensified with a second photoresistor or photocell in series with the lamp and subject to decreasing resistance as the lamp brightens. This constitutes a positive feedback and holds the neon lamp on. A third photoresistor or photocell in series with a switch responds to the bright lamp to turn on the switch and hence the light source. When the ambient light reduces beyond a given threshold the first photocell turns off the lamp and the second photocell increases its resistance enough to hold off the lamp.

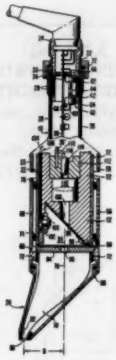
3,735,142
MANUALLY OPERATED BAR CODING SCANNING SYSTEM

Jerome Danforth Harr, San Jose, and David Harwood McMurtry, Portola Valley, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,555
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 D 10 Claims

A low-cost hand held probe for scanning bar coding documents of high density comprises a bundle of many discrete optical image fibers which is optically constricted into a light carrying conduit of bar-shaped cross-section by means of an aperture plate having a single elongated aperture stop therein. The aperture transmits light from a source of illumination down the optical conduit to a paper document. The light is reflected from the document in preparation to the bar coding indicia thereon and is transmitted back up through the conduit to a photosensitive device coupled to circuitry for determining the degree of light reflected. The optical bundle is preferably tapered and is drawn in a unit which eliminates critical align-

ment problems and reduces the number of operations for manufacture. No critical movement on the part of the operator is required in orienting the probe with respect to the document being scanned. One embodiment comprises an offset optical fiber tip arranged to rotate at the end of the probe in caster-like fashion. In other embodiments a flexible fiber optic conduit permits the use of larger and more complex illumination and photoresponsive devices without unduly handicapping the operator.



3,735,143

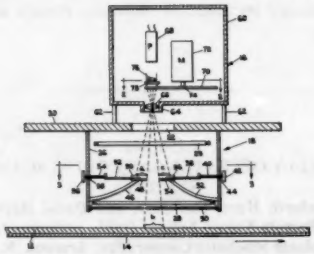
COLOR MONITORING APPARATUS

Graham G. Langford, Johannesburg, South Africa, assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed Jan. 3, 1972, Ser. No. 214,979

Int. Cl. G01j *3/34*

U.S. Cl. 250—226 **12 Claims**



A color monitoring apparatus in which the color of the product is photoelectrically monitored by viewing the product in its entirety and also serially viewing optical reference means having lighter and darker optical values than the product. An automatic gain control sets the gain from the photoelectric detecting means at a predetermined level based on the optical values of the optical reference means. The optical values seen by the detecting means can be changed by adjusting the optical reference means. A special shutter disk having radially and circumferentially spaced openings rotates beneath a photomultiplier tube to effect the serial viewing of the reference plates and the product.

3,735,144

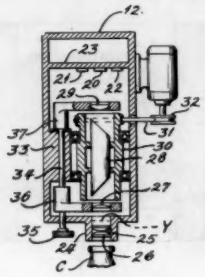
CONTAINER FLAW INSPECTION APPARATUS

Momir Babunovic, Des Peres, and Siamac Faani, Crestwood, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed July 19, 1971, Ser. No. 163,704

Int. Cl. H01j *39/12*

U.S. Cl. 250—223 B **5 Claims**



Apparatus for inspecting containers, such as glass or plastic bottles, for defects that would render the same unsuitable for commercial use. The apparatus includes means to illuminate each container from more than one position so that defects are highlighted, independently of the orientation of round bodied containers, and means to inspect the container through its filling neck with the area of view and depth of focus selected to be appropriate to the size and character of containers. The inspection means employs photocells arranged in a pattern to make it easy to inspect more or less of the interior of a container and incorporates a lens system having the characteristics of converting an object of substantial depth to an image whose depth is greatly condensed and easily handled by a photocell scanner.

3,735,145

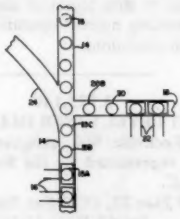
MAGNETIC BUBBLE DOMAIN SYSTEM

David M. Heinz, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 16, 1970, Ser. No. 81,232

Int. Cl. H03k *19/168*; G11c *11/14*, *19/00*

U.S. Cl. 307—88 LC **8 Claims**

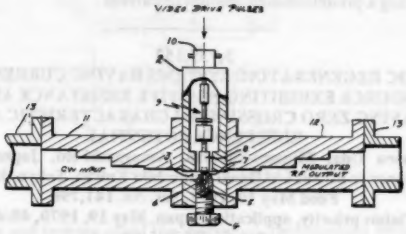


A magnetic bubble domain system comprising one or more channels of magnetic bubble domain material on a supporting substrate is described. Any number of these individual magnetic bubble domain channels may be interconnected or connected to a main channel. The movement of bubble domains along a channel is effected by the repulsive or interaction forces between bubble domains which are present in a channel when a bubble domain is formed or propagated near another bubble domain. The movement of bubbles from a given channel into one of several possible adjoining channels to perform a logic function may be directed by the presence or absence of bubbles in one or more connecting channels.

3,735,146
NANOSECOND PULSE MODULATOR

William E. Blore; Srbislav V. Zivanovic, both of Goleta, Calif., and Bernard Charest, Ste-foy, Quebec, Canada, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,811
Int. Cl. H03k 3/00
U.S. Cl. 307—106 5 Claims

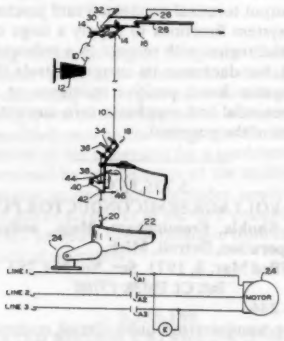


Nanosecond pulse modulation of a CW carrier wave propagating in a waveguide transmission line is accomplished by control of a varactor diode disposed across a one-quarter height waveguide section. In its quiescent the varactor diode is series resonant at the frequency of the carrier wave, causing the carrier wave to be reflected (or switched off). Control of the series resonant frequency is accomplished by selection of a diode having appropriate capacitance and package inductance, by diode position within the waveguide section, and by a reverse diode bias. Additional shunt capacitance and resonance control is obtained by means of a variable post proximate to the varactor diode. The varactor diode is converted to parallel resonance (and the CW carrier wave switched on) by periodically forward biasing the varactor diode with pulses from a video drive pulse source.

3,735,147
AUTOMATIC RESTART CIRCUIT FOR KNITTING MACHINES AND THE LIKE

Albert A. Kryszek, 5716 S. W. Brugger, Portland, Oreg.

Filed June 8, 1972, Ser. No. 260,768
Int. Cl. H01h 35/00
U.S. Cl. 307—119 13 Claims

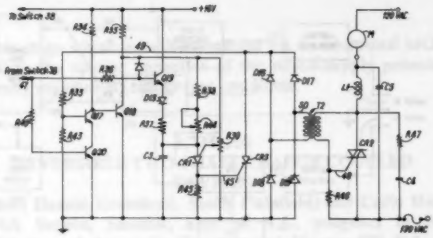


A control circuit for a knitting machine interrupts machine operation in the event that yarn tension is improper as detected by plural stop-motion devices. After a predetermined time period, the machine is automatically restarted if proper tension conditions are restored, but if improper tension remains, the machine is semi-permanently disabled until service personnel can correct the improper conditions and restart the machine manually. A main control relay remains operative for a predetermined delay period after a "tentative stop" for reinitiating machine operation at the end of such time under proper conditions.

3,735,148
SYSTEM FOR HEATING OR AIR CONDITIONING

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 31,167, April 23, 1970. This application Jan. 10, 1972, Ser. No. 216,715
Int. Cl. H01h 33/44
U.S. Cl. 307—133 1 Claim

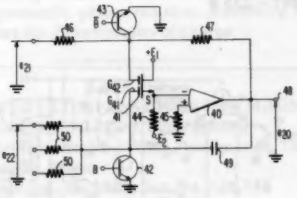


A system for heating or air conditioning wherein provision is made for controlling fan speed and/or the heating and modulating valve in accordance with thermostat demand. The thermostat puts out a step function followed by a ramp for both on-off and proportional control. One valve may be used in series with another for each function. A logic gate is provided to override the speed control when the plenum is cold. Half speed is provided for a hot plenum even though there is no thermostat demand for heat. Two detectors are provided for plenum temperature. The same thermostat is used with both voltage sensitive and current sensitive circuits.

3,735,149
OPERATIONAL CIRCUIT

Kiyoshi Tuchiya, Minato-ku, Tokyo-to, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 1, 1971, Ser. No. 158,793
Int. Cl. G06g 7/12
U.S. Cl. 307—230 7 Claims



Disclosed herein are a variety of operational circuits each including an operational amplifier with a plurality of feedback loops. Each of the feedback loops as well as the circuit inputs are connected to the operational amplifier through a high impedance input terminal forming part of a feedback loop switching circuit. The switching circuit includes a field effect transistor circuit, the high impedance input terminals comprising the gate electrodes of the field effect transistors. Signals in the feedback circuits are selectively applied to the inputs of

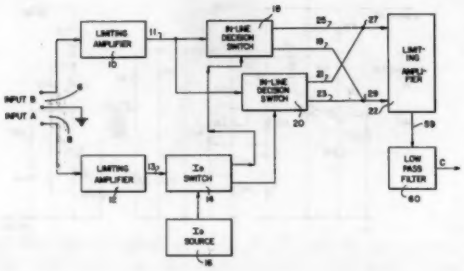
the operational amplifier by selectively shorting each of the feedback loops to ground potential. The selective shorting is accomplished by using bipolar transistors placed in a conductive state by control signals.

3,735,150

LOW NOISE PHASE DETECTOR

Robert W. Harris, Temple Hills, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1971, Ser. No. 210,349
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **5 Claims**



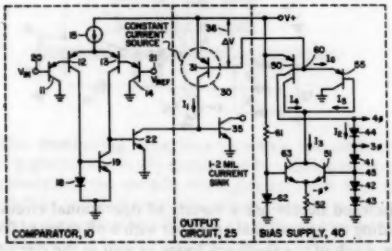
A phase sensitive detector employing a pair of limiting amplifiers, wherein the outputs are respectively connected to a current switch and a pair of in-line-decision switches. The in-line-decision switches and the current switch provide a current on one of two lines that is indicative of a phase difference between two periodic waveforms as they appear on the input of the limiting amplifier. The switching properties are controlled as a function of each waveforms' zero-cross-over point in time. This circuit measures phase difference with high accuracy and resolution and with minimal degradation of the accuracy when measuring weak or noisy signals as a result of employing all zero cross-overs.

3,735,151

OUTPUT CIRCUIT FOR COMPARATORS

Thomas M. Frederiksen, Scottsdale, and Ronald W. Russell, Mesa, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 16, 1971, Ser. No. 171,994
Int. Cl. H03k *1/02, 1/14;* **H03f** *1/30*
U.S. Cl. 307—235 R **12 Claims**



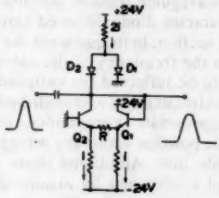
There is disclosed an output circuit for a comparator which operates, because of its high gain, as a switching circuit. It is the major feature of the output circuit that it operates such that the drive current for its output stage and the amount of load current it can sink are independent of supply voltage variations. Thus the output circuit is relatively unaffected by changes in, for instance, the output of a portable power supply such as a battery. Whenever an analog input level from the comparator is below a given level, the drive current is coupled to drive an output transistor into saturation. When the comparator changes state this drive current is shunted to ground through a transistor of the comparator circuit. Thus the output transistor acts as either an opened or closed switch capable of sinking a predetermined amount of current.

3,735,152

DC REGENERATING SYSTEMS HAVING CURRENT SOURCE EXHIBITING POSITIVE RESISTANCE AND HAVING ZERO CROSSING V-I CHARACTERISTIC AT A REFERENCE POTENTIAL

Minoru Oda, Minami-Shimizu, Amagasaki-shi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,796
Claims priority, application Japan, May 19, 1970, 45/42626
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **13 Claims**



A DC regenerating system, comprising a differential amplifier including first and second transistors with their emitter electrodes connected to a common power source of a first polarity, preferably through a resistor, a pair of semiconductor elements, a source of opposite polarity potential connected in common to one electrode of the semiconductor elements preferably through a resistor, means to connect another electrode of one of the semiconductor elements to the juncture between the base electrode of the first transistor and the collector electrode of the second transistor, an input terminal, a capacitor connected between the input terminal and said juncture and an output terminal connected said juncture. The DC regenerating system functions to supply a large current in a limited potential region with respect to a reference potential (usually zero), but decreases its current outside the potential region. The system has a positive resistance at a reference point of the potential and supplies a zero current only at the reference point of the potential.

3,735,153

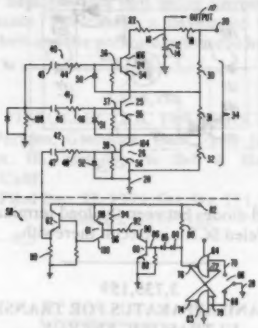
HIGH VOLTAGE SEMICONDUCTOR PULSE

Narendra M. Shukla, Framingham, Mass., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 8, 1971, Ser. No. 121,753
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 **4 Claims**

High voltage transistorized pulse circuit controlling a high voltage pulse as might be applied to a piezoelectric crystal for operating a hammer or a wide line high speed printer. The dimensional change of a piezoelectric crystal is a function of the potential in an application of energy which is applied to the crystal. The crystal is initially charged across its width which is transverse to the length of the crystal causing a reduction in its length thereby storing potential energy for later utilization. When the crystal is to be actuated, the crystal is discharged and the charge stored on the crystal plates is quickly dissipated through a plurality of cascaded

transistorized switches. Each switch has an individual breakdown voltage rating which is proportional to the circuit voltage, therefore it is necessary to sequentially control the turn-



ing on and turning off of the individual transistorized switches to prevent the collector-emitter voltage of the several transistors from exceeding their breakdown voltage rating.

3,735,154

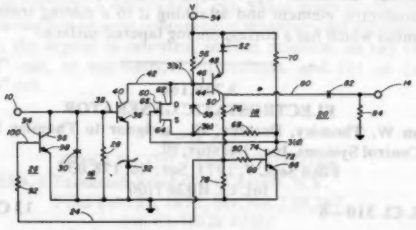
DISABLING CIRCUIT HAVING A PREDETERMINED DISABLING INTERVAL

George W. Meeker, Silver Spring, and Allan E. Pertman, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 866,303, Oct. 4, 1969, abandoned. This application Nov. 19, 1971, Ser. No. 200,534

Int. Cl. H03k *3/10*

U.S. Cl. 307—273 **1 Claim**



A disabling circuit having an integrator-threshold device, a pulse generator such as a monostable multivibrator and a shaper for delivering an output pulse to a load. A feedback path including a semiconductive switch element from the output of the multivibrator to the integrator-threshold device inhibits operation of the integrator for a predetermined time interval determined by the duration of the multivibrator pulse. The monostable multivibrator includes semiconductive circuitry which draws no power in the OFF condition and further includes a FET to insure rapid transition from the ON mode to the OFF mode of operation.

3,735,155

INTEGRATED BISTABLE STAGE HAVING MOS FIELD EFFECT TRANSISTORS

Gunther Eberhard, Munchen 80, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

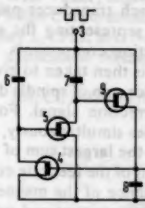
Filed Feb. 7, 1972, Ser. No. 224,182

Claims priority, application Germany, Mar. 16, 1971, P 21 12 481.2

Int. Cl. H03k *3/286*

U.S. Cl. 307—279 **1 Claim**

A bistable stage in an integrated circuit has two inverter stages connected in series. Each of the inverter stages comprises an MOS-FET and a load capacitor. The inverter stages have a timed supply potential. The first inverter stage is controlled via the storage capacitor and controls the second in-



verter stage which is itself connected via an additional MOS-FET to the storage capacitor of the timed supply potential thereby maintaining the storage condition.

3,735,156

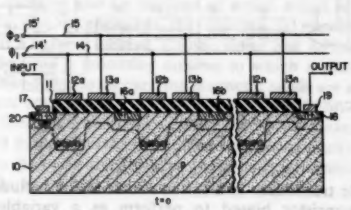
REVERSIBLE TWO-PHASE CHARGE COUPLED DEVICES

Robert Harold Krambeck, South Plainfield, and Carlo Heinrich Sequin, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 28, 1971, Ser. No. 157,510

Int. Cl. H01l *11/14*

U.S. Cl. 307—304 **8 Claims**



Two-phase charge coupled devices are disclosed with no asymmetry in the structure to prevent reversing the direction of flow of charge carriers. The structure includes sets of two electrodes separated by wide gaps. An appropriate fixed charge in these gaps allows storage and transfer of charge carriers. The charge may be localized in the gap, or may be implanted uniformly over the surface of the device in the storage medium or in the insulating layer.

Unidirectionality of transfer is achieved by a pulse train having an asymmetric phase relation. Reversing the phase relation reverses the directionality of charge.

3,735,157

TEMPERATURE COMPENSATION FOR MAGNETIC MILLING FORCE SENSORS

William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 26, 1972, Ser. No. 220,748

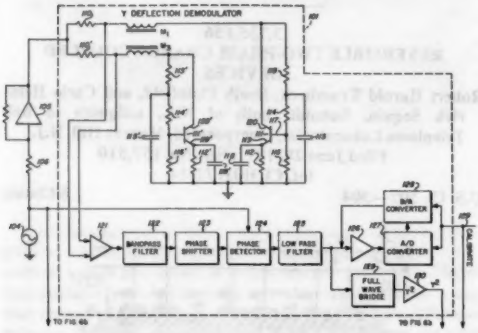
Int. Cl. H03k *5/18*

U.S. Cl. 307—304 **6 Claims**

An improved system is provided for sensing spindle deflection of a milling machine and developing a feedrate control signal in accordance therewith to achieve optimum tool life consistant with high metal removal rate from a workpiece. A plurality of magnetic transducers are disposed adjacent the spindle or spindles of a milling machine, and each magnetic transducer is excited by an audio frequency signal such that, as deflection of a spindle brings the spindle closer to or moves it further from a transducer, a corresponding change in the impedance characteristics of the transducer is utilized to develop

an a-c signal of a given amplitude. Signals developed from opposing transducers are fed to a differential amplifier to derive a difference signal which is demodulated by a phase detector, rectified and filtered, and then passed through a squaring circuit in order that signals corresponding to the square of the deflection sensed by each transducer pair may be mixed to provide a d-c voltage representing the sum of the squares representing the deflection components. The square root of the sum of the squares is then taken to give a feedback signal proportional to the vector sum of spindle deflection for utilization as a feedrate correction signal. For milling machines utilizing multiple spindles simultaneously, a peak detector circuit is utilized to select the largest sum of the squares only for subsequent development of the feedrate correction signal.

Changes in the resistance of the magnetic transducers due to temperature variations encountered under normal operating conditions are compensated by placing the coil of each



magnetic transducer in a series circuit which includes a field effect transistor biased to perform as a variable resistor responsive to a change in current flow through the coil by presenting an apparent resistance which opposes the change in current. Runout, which introduces an invalid deflection signal component by modulating the audio frequency reference signal according to the rate of spindle rotation, is compensated by observing the signal produced by runout from each tool holder, tool combination prior to machining, and then providing a continuous equal and opposite signal thereby leaving only the component due to actual spindle deflection. This signal also compensates for component drift. This function is carried out by a loop including a d-c amplifier which drives an A-D converter which, in turn drives a D-A converter which has its output coupled back to the input of the d-c amplifier. When activated, the calibrate circuit introduces trial signal levels until the output of the d-c amplifier is zero, thus negating the effect of runout.

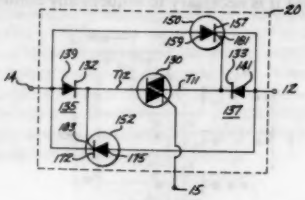
3,735,158

THREE TERMINAL BIDIRECTIONAL CONDUCTIVE SWITCHING NETWORK

Glen L. McDonald, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 19, 1972, Ser. No. 264,096
Int. Cl. H03k 17/72
U.S. Cl. 307—305 **7 Claims**

A three terminal network having first and second load terminals for connection in series circuit relationship with a load across a pair of power supply terminals, and a third gating terminal for controlling alternating current flow in the load. The present three terminal network may be substituted for a triac with corresponding terminal connections to provide triac control functions at greatly increased current levels through the load terminals however with triac level control signals applied to the third gating terminal. The network includes a triac and



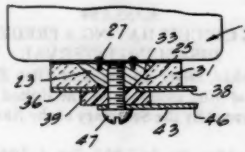
series connected diodes between the load terminals and a pair of inverse paralleled SCR's in circuit therewith.

3,735,159

METHOD AND APPARATUS FOR TRANSLATING ULTRASONIC ENERGY

Edward J. Murry, 9223 West 119th St., Palos Park, Ill.

Filed Jan. 24, 1972, Ser. No. 220,096
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 **13 Claims**



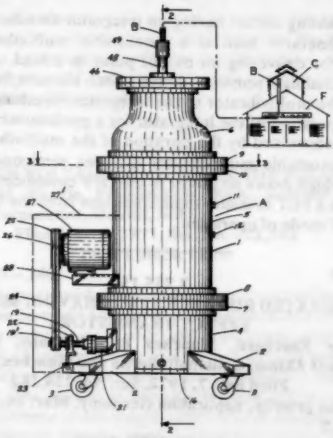
A novel method and apparatus for converting vibratory energy in the radial direction into vibratory energy in the longitudinal direction by forming a tapered surface on a piezoelectric element and attaching it to a mating transition member which has a corresponding tapered surface.

3,735,160

ELECTROSTATIC GENERATOR

John W. Thomley, Decatur, Ill., assignor to Thomley Static Control Systems, Inc., Decatur, Ill.

Filed Sept. 7, 1971, Ser. No. 178,037
Int. Cl. H02n 1/00
U.S. Cl. 310—6 **13 Claims**



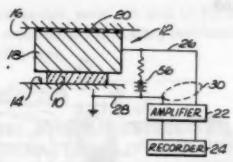
The combination of a tubular conductor for an electrostatic charge and a generator, said latter comprising an insulated

housing having an insulated endless belt for accepting a charge at its lower end and transferring same at its upper end to a tubular electrostatic conductor; the portion of the latter immediately adjacent said belt being surrounded by a bell-shaped collector. The charge is developed by the speed of travel of the belt and the pressure within the housing.

3,735,161
PIEZOELECTRIC TRANSDUCER

George D. Perkins, Glendora, Calif., and John R. Colbert, Champaign, Ill., assignors to Bell & Howell Company, Pasadena, Calif.

Filed Dec. 23, 1971, Ser. No. 211,200
Int. Cl. H01v 7/02
U.S. Cl. 310—9.5 16 Claims

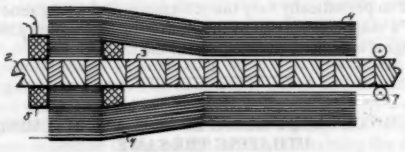


A lithium niobate piezoelectric single crystal transducer having selected rotational orientations with respect to X, Y and Z rectangular coordinate axes. Compressional mode accelerometers having low or zero shear and torsion sensitivity are provided in which the crystal is oriented, in IRE notation, as (a) a (*yxl*) +38.6° cut or symmetrical equivalents thereof, such as (*zxl*) (b) a +60°/+51.4° cut. Shear mode accelerometers having low or zero compression sensitivity are provided in which the crystal is oriented, in IRE notation, as (a) (*xyl*) +31.7° cut, or symmetrical equivalents, and (b) an (*xyl*) +76.7° cut.

3,735,162
SINGLE-COIL LINEAR MOTORS

Max Alth, 6 Tamarack Road, Port Chester, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,267
Int. Cl. H02k 41/02
U.S. Cl. 310—13 10 Claims



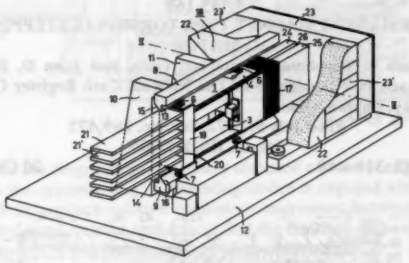
One element comprises a long bar of copper or aluminum transversely pierced at regular intervals by iron cores. The second element— either element may move— comprises a solenoid with an iron core terminating in two long arms, parallel to each other and spaced a little wider than the aforementioned conductive bar, which is positioned by idler wheels between and in line with the arms of the solenoid's core.

When the solenoid is energized by AC, a repulsion current is induced in the conductive bar and it moves away from the coil, guided by the idler wheels.

3,735,163
LINEAR MOTOR FOR THE POSITIONING OF MAGNETIC HEADS

Durk Dijkstra, Rijswijk; Willem Van Der Hoek, Eindhoven, Emmasingel, and Wim Visser, Rijswijk, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1972, Ser. No. 249,315
Claims priority, application Netherlands, May 6, 1971, 7106185
Int. Cl. H02k 41/02
U.S. Cl. 310—13 7 Claims

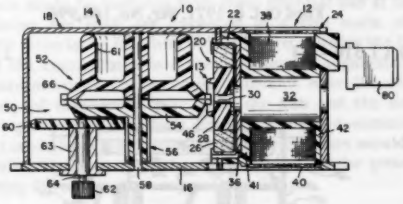


A device for positioning magnetic heads for use in a disk store, which device includes a carriage which is provided with rollers and is displaceable on fixed guide tracks. The carriage has the form of a sectional beam which has at least two parallel outer surfaces and on one end of which a coil is wound. When the coil is energized the carriage is movable with respect to a magnet system. On the other end of the beam, there is secured a mounting column to which a plurality of parallel supporting arms carrying magnetic heads are secured. The rollers are mounted at two spaced locations on the two outer surfaces in a manner such that the rotation axes of the rollers are inclined to these surfaces. The guide tracks extend parallel to the two outer surfaces and provide dimensional stability to the beam which is supported at four points.

3,735,164
DRIVE ARRANGEMENT INCLUDING A SYNCHRONOUS MOTOR

Wallace L. Linn; Bill G. Kilmer, and Richard H. Weber, all of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sept. 16, 1971, Ser. No. 181,177
Int. Cl. H02k 7/10
U.S. Cl. 310—41 17 Claims



A synchronous motor and a rotating motion transmission arrangement, the synchronous motor including a rotor having a driving surface operable in a plane substantially normal to the axis of the rotor, the rotating motion transmission arrangement being responsive to the driving surface and operable in a plane substantially normal to the plane of the driving surface, with each of the driving surface and the rotating motion transmission arrangement including a means cooperating with one another to prevent the rotor from rotating in a wrong direction. The stator structure of the synchronous motor has

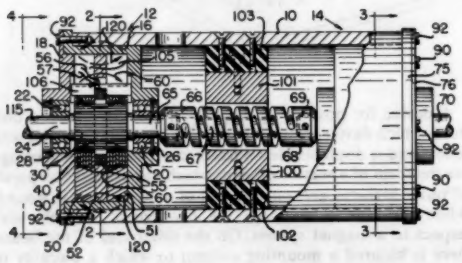
poles arranged in groups whereby good starting characteristics and relatively high running torque is achieved in a relatively small amount of confined space. A coil bobbin includes a spool arranged for receiving electrical terminals and adapted to provide passage for a wire of a winding to the electrical terminals within the confines of the spool. The spool is unitarily constructed with a base member, the base member adapted to align and maintain the spool, the permanent magnet rotor and the stator structure in cooperating working relationship with each other.

3,735,165

PERMANENT MAGNET TYPE TORSIONAL STEPPING MOTOR

William S. Touchman, Kettering, Ohio, and John D. Hays, Ithaca, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed July 6, 1972, Ser. No. 269,477
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 **20 Claims**



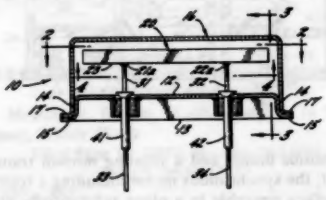
An incremental rotary motion device or stepping motor has a plurality of permanent magnet rotor assemblies which are connected by means of a torsionally resilient coupling member. The coupling member is in the form of a torsion spring which is capable of storing and releasing energy for aiding in incrementally advancing one rotor assembly and then the other rotor assembly in sequential manner. A bucking coil is positioned around each rotor and is pulsed to divert the magnetic lines of force emanating from the permanent magnet thereby allowing the releasing and storing of energy of the coupling member to advance the output shaft.

3,735,166

PIEZOELECTRIC CRYSTAL ASSEMBLY

Deward C. Bradley, Sandwich, Ill., assignor to CTS Corporation, Elkhart, Ind.

Filed Oct. 6, 1971, Ser. No. 186,990
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.4 **2 Claims**



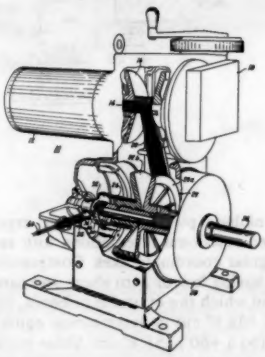
A piezoelectric crystal assembly in which a base is provided having small diameter tubulations parallel to one another with a center-to-center spacing which corresponds to the center-to-center spacing of crystal lead wires which extend straight downwardly at right angles from the undersurface of the crystal, with the leads being telescoped into the tubulations and soldered therein to provide the sole support for the crystal and with the lead wires being elongated to extend beyond the tubulations for direct connection to associated circuit components. The tubulations are flared to provide guidance for the lead wires and to accommodate an annular body of solder. The crystal is spaced upwardly from the tubulations to provide straight free lengths of lead wire for accommodation of torsional vibration imparted to the lead wires by the crystal.

3,735,167

SPEED SENSOR FOR MECHANICAL ADJUSTABLE SPEED DRIVE

Jack C. Wickersheimer, West Allis, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Filed Dec. 7, 1971, Ser. No. 205,573
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **5 Claims**



An adjustable ratio transmission mechanism having a variable speed ratio between an input shaft and an output shaft where the speed ratio is varied by changing the effective diameters of a pulley on one shaft having oppositely disposed, coned halves, one fixed and one selectively axially movable along the shaft, and a second pulley on the other shaft having oppositely disposed, coned halves, one fixed on the shaft and one movable axially along the shaft, the movable half being spring biased against the fixed half, the two pulleys being coupled by a belt. Adjusting selectively movable half of one pulley with respect to its fixed half produces the opposite movement of the movable half of the other pulley biased by the spring. The improvement comprising a single cup-like member to both retain the pulley biasing spring and position and provide a means to sensing shaft speed. The cup-like member is perforated to periodically vary the reluctance of the magnetic circuit of a magnetic pickup as the shaft rotates, thereby providing a signal indicative of the speed of the shaft.

3,735,168

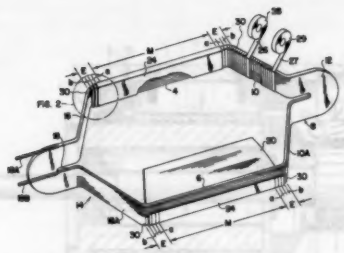
HIGH VOLTAGE INSULATED COIL AND MACHINE UTILIZING THE SAME

Robert L. Anderson, Bay Village, and Marvin M. Fromm, Cleveland Heights, both of Ohio, assignors to Portec, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 119,571, March 1, 1971, Pat. No. 3,662,199. This application Dec. 20, 1971, Ser. No. 210,178
Int. Cl. H02k *3/00*
U.S. Cl. 310—200 **14 Claims**

An improved insulated coil for an electrodynamic machine is prepared by wrapping multiple layers of a wide insulative wrapper around the straight section of the coil, in overlapping contact with a narrow insulative tape applied on the end portion of the coil. The wrapped coil is then vacuum-pressure im-

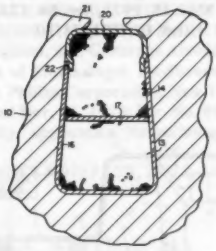
pregnated with a liquid, heat-reactive resin, and the coil is then heat and pressure treated to cure the liquid resin impregnate to a permanent, solid set and to form thereby an insulated coil with a continuous, unitary insulative joint between the wrapper and the tape.



3,735,169
CHANNEL, SHAPED, LAMINATED, HIGH TEMPERATURE SLOT WEDGE FOR DYNAMOELECTRIC MACHINES

Roy Leonard Balke, and Domenico Cipriani, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Filed Apr. 14, 1971, Ser. No. 133,820
Int. Cl. H02h *3/48*
U.S. Cl. 310—214 **7 Claims**



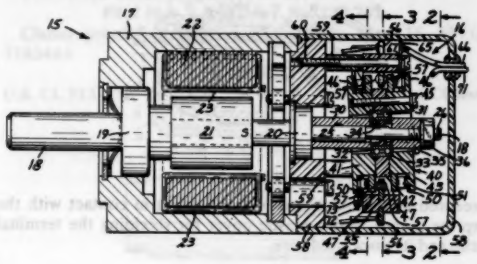
A rigid, laminated, thin "slot wedge" construction is described along with the method for fabricating it from flexible, normally difficult to form plastics. The laminated wedge is channel shaped with well defined corners to provide firm seating of the wedge in the slots of a dynamoelectric machine. A rigid, laminated channel shaped slot wedge having excellent corner definition is produced from thin, flexible high temperature plastics such as "Kapton" polyimide film or "Nomex" polyamide sheets by laminating them with an adhesive which is rigid when cured. The laminate is baked and the adhesive cured while it is held in the desired channel form by a clamping fixture. This imparts the desired rigidity and long term corner definition to the wedge while yet retaining the desired high temperature qualities of the individual laminations.

3,735,170
COMMUTATOR FOR D.C. MACHINES

Roland S. Christensen, 6101 June Street North, Minneapolis, Minn., and Stanley A. Helder, 4609 Vallacher Avenue, St. Louis Park, Minn.

Filed Aug. 9, 1971, Ser. No. 170,074
Int. Cl. H02k *13/00*
U.S. Cl. 310—219 **16 Claims**

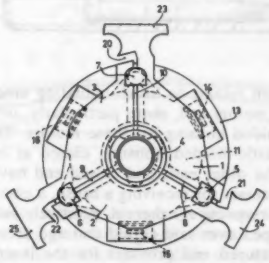
A pair of electrically conducting rings having continuous contact surfaces thereon positioned in parallel spaced apart relationship to form a channel, and a plurality of contacts adapted to be connected to the various windings of the machine and positioned in a circular spaced apart orientation within the channel so that at least one contact is engaged with one of the rings and an oppositely disposed contact is engaged with the opposite ring. A mounting device is engaged with the shaft to produce relative oscillatory movement between the pair of rings and the contacts so that the contacts sequentially engage each ring during each rotation of the shaft.



3,735,171
FLAT COMMUTATOR STRUCTURE

Jan Maarten Van De Griend, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 180,027
Claims priority, application Netherlands, Sept. 23, 1970, 7014025
Int. Cl. H01r *39/16*
U.S. Cl. 310—235 **8 Claims**



A flat commutator structure having commutator segments which are made by stamping from sheet material and at their ends facing the shaft are anchored in a hub made of a synthetic material by injection moulding. To increase the flatness of the commutator face the commutator segments are also interconnected by anchoring elements near the outer periphery of the commutator. Both the hub and the latter anchoring elements may form parts of a single commutator support made from a synthetic material by injection moulding and preferably have open chambers into which the grooves separating the commutator segments terminate.

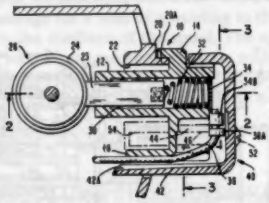
3,735,172
MOTOR BRUSH HOLDER

Patrick A. Battaglia, Elizabeth, and Edwin Fitzwater, Rahway, both of N.J., assignors to The General Signal Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,683
Int. Cl. H02k *13/00*
U.S. Cl. 310—239 **7 Claims**

A motor brush holder is disclosed including a plastic housing having a bore for receiving an electrically conductive

brush and spring means engaged at one end with the brush, and further having the provision of a terminal clip means



secured at the outer end of the housing in contact with the spring means, and a plastic cover for shielding the terminal clip and its associated wire.

3,735,173

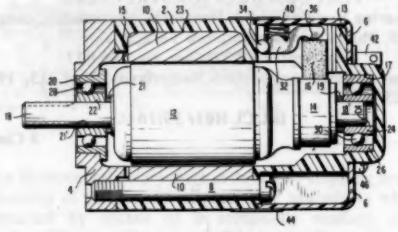
ELECTRIC MOTOR CONSTRUCTION

Jules Wisniewski, Cliffside Park, N.J., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,639

Int. Cl. H02k *13/00*

U.S. Cl. 310—242 **9 Claims**



This invention relates to brush actuating mechanisms for direct current motors and, more particularly, to an innnovative plastic-molded housing for these motors. The invention discloses a plastic-molded housing, closed at one end and apertured at the other end, said closed end having opposed longitudinal recesses for receiving a brush, a cam lever, and a helical spring, respectively therein, positively retained by an end cover slipped over said closed end and secured thereto, while said apertured end provides for the insertion of permanent magnets and a driven shaft carrying an armature, and commutator.

3,735,174

ELECTRIC MOTOR WITH HOLLOW ROTOR AND METHOD OF FABRICATING THE HOLLOW ROTOR

Lothar Bosch, 755 Rastatt, and Hans-Joachim Blocher, 7418 Metzingen, both of Germany, assignors to Gesellschoft Fur Kernforschung mbH, Metzingen, Germany

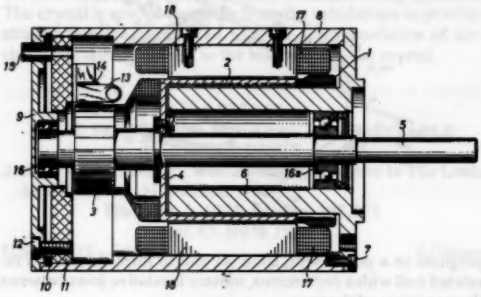
Filed Nov. 27, 1970, Ser. No. 93,374

Claims priority, application Germany, Nov. 26, 1969, P 19 54 280.4

Int. Cl. H02k *1/22*

U.S. Cl. 310—266 **14 Claims**

An electric motor with a hollow rotor is described whose armature winding is arranged on an extremely thin-walled tubular winding support. The stationary ferromagnetic core of the hollow rotor and the likewise ferromagnetic core of the exciting winding are equipped with cooling channels through which, e.g., water is fed for removal of the heat produced by the electric current. The hollow rotor, which is arranged on the armature shaft so as to be displaceable by means of a sliding sleeve can be slowed down by means of an electromagnetic braking device in such a way that the forces generated by a spring and an electromagnet in the direction of the armature shaft are transferred to the hollow rotor by a disk attached to the sliding sleeve. The braking areas used are parts of the in-



side wall of the winding support which has a cylindrical or conical shape. Moreover, a method of fabricating a hollow rotor is described.

3,735,175

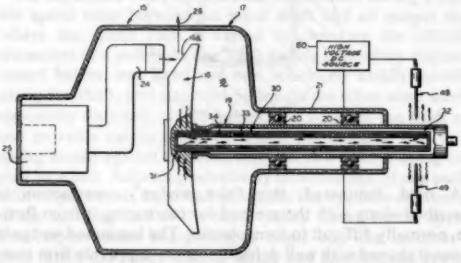
METHOD AND APPARATUS FOR REMOVING HEAT FROM WITHIN A VACUUM AND FROM WITHIN A MASS

Oscar C. Blomgren, Jr., Lake Bluff, Ill., assignor to Inter-Probe, Inc., North Chicago, Ill.

Filed Mar. 15, 1971, Ser. No. 124,030

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **5 Claims**



A method and apparatus for cooling elements generating heat within a vacuum and the center of a large mass of hot material including a heat pipe having the input end within a vacuum or a large mass of material and the output end exterior thereof, and means for subjecting the output end to an electrostatic field to materially increase the rate of heat transfer into the atmosphere.

3,735,176

ROTATING ANODE BALANCE AND GETTER

Helmut Langer, Springdale, and William W. Fengler, Fairfield, both of Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

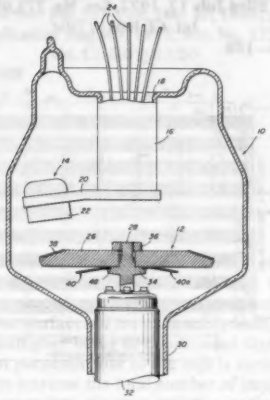
Filed May 1, 1972, Ser. No. 252,509

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **8 Claims**

A rotating anode for X-ray tubes having a supporting rotatable shaft carrying fixed swing weights which may be initially

positioned as necessary to achieve balance of the anode, and



which simultaneously provide getter and heat shielding functions.

3,735,177

CAMERA TUBE HAVING A PHOTOCONDUCTIVE TARGETPLATE AND LUMINESCENT SURFACE ON ELECTRODE FOR FIXING DARK CURRENT

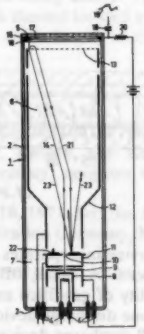
Willem Paul Weijland, and Gerardus Arnoldus Herman Maria Vrijssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,699

Claims priority, application Netherlands, Nov. 17, 1969, 6917279

Int. Cl. H01j *31/38, 29/18, 31/40*

U.S. Cl. 313—65 A **4 Claims**



A camera tube whose target plate is stabilized by slow electrons and whose dark current is comparatively low, is provided with a luminescent material which is arranged in the viewing field of the target plate at the area where the electrons returning from the target plate are captured so that the luminescent light produced by said electrons illuminate the target plate more or less uniformly.

3,735,178

CATHODE RAY TUBE COMPRISING AT LEAST ONE ELECTRON GUN FOR PRODUCING A NUMBER OF ELECTRON BEAMS

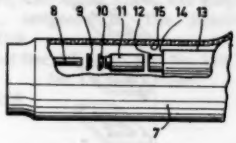
Jan Peper, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,762

Claims priority, application Netherlands, Mar. 16, 1971, 7103464

Int. Cl. H01j *29/56*

U.S. Cl. 313—70 **4 Claims**



A cathode ray tube, in particular a color tube, in which two or more electron beams are produced, focused, and converged on a picture display screen. A part of each electron beam is intercepted and reflected against a given part of the neck as a result of which the potential thereof rapidly adjusts at an equilibrium value after switching on the tube.

3,735,179

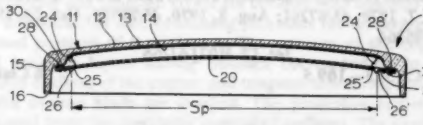
FACE PANEL ASSEMBLY FOR COLOR CATHODE-RAY TUBE

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 3, 1972, Ser. No. 240,562

Int. Cl. H01j *1/96, 19/50, 29/46*

U.S. Cl. 313—92 B **9 Claims**



A face panel assembly for a color picture tube has a face panel formed of a glass having a predetermined coefficient of thermal expansion and a cylindrically shaped target surface that supports a screen. An aperture mask formed of a material having a different coefficient of thermal expansion has a plurality of index stations and a pair of end-mounted strips which are formed of the material having a coefficient of thermal expansion substantially the same as that of the face panel. A plurality of pedestals having upstanding posts are affixed to the face panel and cooperate with the index stations of the mask to support the mask in a predetermined spaced relation to the target surface, to conform the mask to a contour that matches the target surface and to prevent lateral displacement of the mask. Finally, frit means are employed to secure the mask mounting strips to the flange of the face panel.

3,735,180

DATA DISPLAY DEVICE OF THE GAS DISCHARGE TYPE

Maurice Coulon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sept. 22, 1971, Ser. No. 182,763

Claims priority, application France, Sept. 24, 1970, 70/34663

Int. Cl. H01j *61/66*; H01k *7/04*

U.S. Cl. 313—109.5 **4 Claims**

A gas discharge type data display device is formed of a stack of alternately conductive and insulating elements for localiz-

ing the discharge by proper potential distribution, the control of which is effected by a conductive screen electrode positioned between anode and cathode. Discharge is confined in a

plurality of cavities provided in said stack. The device permits a storage of data in said cavities for an indefinite period of time.

3,735,181

SEGMENT TYPE DISPLAY TUBE FOR SELECTIVELY DISPLAYING ONE OR MORE OF A PLURALITY OF ALPHA-NUMERICAL CHARACTERS

Masaki Kobayakawa, and Takashi Yoshii, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,119

Claims priority, application Japan, June 29, 1970, 45/64610; July 7, 1970, 45/67261; Aug. 8, 1970, 45/80955; Oct. 23, 1970, 45/105364

Int. Cl. H01j *61/66*

U.S. Cl. 313—109.5 **6 Claims**

A display tube for use in displaying various characters comprises an electrode assembly sealed in a container. The electrode assembly has a first electrode and a set of character segment electrodes. The tube further comprises a first stem lead connected to the first electrode and a set of second stem leads connected to the set of character segment electrodes, respectively through a set of lead-wires. The set of lead-wires are secured to an insulator frame means defining an opening providing a discharge space so that the set of character segment electrodes may be arranged in one common plane in the opening. The lead-wires and second stem leads may integrally extend from the character segment electrodes.

3,735,182

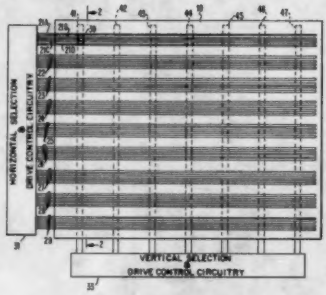
GRAY SCALE GAS PANEL

John J. Dalton, Rhinebeck, and Marvin B. Skolnik, Woodstock, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 12, 1972, Ser. No. 271,097

Int. Cl. H01j *17/04*

U.S. Cl. 313—188 **4 Claims**



An improved gaseous discharge display arrangement is disclosed for providing a gray scale display capability with nominal modification of existing gaseous display apparatus. Conductor patterns of different resolution are utilized in the conductor drive configurations which are positioned on opposite sides of the panel in a conventional gaseous panel construction. By controlling the selective energization of the higher resolution lines associated with one of the driving configurations, a variation of intensities is provided depending on the ratio of the resolutions and the number of higher resolution conductors selected for each of the lower resolution conductors.

3,735,183

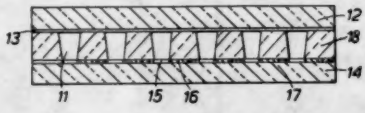
GASEOUS DISCHARGE DISPLAY DEVICE WITH A LAYER OF ELECTRICALLY RESISTIVE MATERIAL

Frank Walters, Bury, England, assignor to Ferranti Limited, Hollinwood, England

Filed May 19, 1971, Ser. No. 144,872

Int. Cl. H01j *61/04*

U.S. Cl. 313—188 **28 Claims**



A visual display device incorporates an array of direct-current discharge devices. A block of electrically insulating material has a plurality of gas-filled cavities, each forming a discharge space for one discharge device, or a single gas-filled cavity common to all discharge devices. A plurality of transparent anode conductors on a face of a second block of electrically insulating material, sealed to the first block, and in registration with the cavities, form anode electrodes for one co-ordinate of the array. Cathode electrodes are carried by a face of a third block of electrically insulating material, also sealed to the first block, and those cathode electrodes of the other co-ordinate of the array are connected by way of electrically resistive material to one of a plurality of cathode conductors. The cathode conductors, which are isolated from the discharge space or spaces, cathode electrodes and electrically resistive material are all carried on said face of the third block.

3,735,184

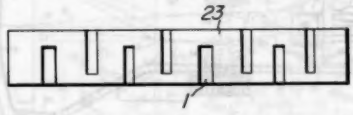
CONTINUOUS DYNODE CHANNEL TYPE SECONDARY ELECTRON MULTIPLIER

Haruo Maeda, Setagaya-ku, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 790,744, Jan. 13, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,229

Int. Cl. H01j *43/20*

U.S. Cl. 313—105 5 Claims



A continuous dynode channel type secondary electron multiplier wherein an electric field is established in the axial direction, and a secondary-electron emissive surface is provided on the inner surfaces of the channel dynode, said secondary electron multiplier being so constructed that an electric field component perpendicular to the axis is varied along the axial direction to increase the total number of impacts of electrons with the secondary-electron emissive surfaces per unit axial length, thereby enhancing the multiplication factor.

3,735,185

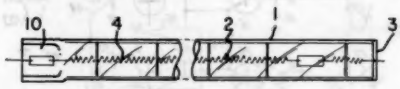
LAMP ASSEMBLY

Robert P. Bonazoli, Hamilton, and James P. Keenan, Reading, both of Mass., assignors to Sylvania Electric Products Inc., Danvers, Mass.

Division of Ser. No. 741,066, June 28, 1968, abandoned. This application Mar. 5, 1971, Ser. No. 121,519

Int. Cl. H01j *1/92, 19/48;* H01k *1/24*

U.S. Cl. 313—278 3 Claims



A tubular tip-less lamp is manufactured by exhausting and filling the lamp through an open end of an extra long tubular envelope, the other end being sealed. The envelope is then press-sealed at a section thereof located a short distance from the open end and the extra length of the envelope is then removed.

3,735,186

FIELD EMISSION CATHODE

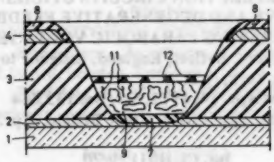
Anton Martin Klopfer, Aachen, and Georg Dittmer, 5101 Roetgen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,851

Claims priority, application Germany, Mar. 14, 1970, P 20 20 121.9

Int. Cl. H01j *1/30, 31/08, 1/02*

U.S. Cl. 313—346 R 7 Claims



A field emission cathode comprises a glass substrate in combination with an insulating layer sandwiched between two conducting layers functioning as electrodes. Cavities extending through one of the electrodes and the insulating layer to the surface of the other electrode contain highly compacted and porous electron emissive layers which provide high electrical resistance between said electrodes and are diffused with metallic gold to form needle-shaped metal deposits on the surface as well as within the emissive layers. Such cathodes are used in image converters and image display tubes.

3,735,187

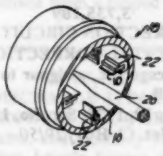
CATHODE BLADE FOR A FIELD EMISSION X-RAY TUBE

W. Leslie Rogers, Ann Arbor, Mich., and Ralph C. Ayres, Mission, Kans., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 22, 1971, Ser. No. 210,796

Int. Cl. H01j *35/06*

U.S. Cl. 313—355 4 Claims



A cathode blade comprising a thin electron emitting layer formed from tungsten that projects from a copper support layer. The tungsten layer is extremely thin so that electrons will be readily emitted from the edge of the blade without requiring that the portion of the blade proximate the electron emitting edge be tapered. The copper support layer is spaced from the electron emitting edge of the tungsten layer, and therefore, does not reduce the sharpness of that edge. The blade is formed by vapor depositing a thin tungsten layer on a copper layer that is somewhat larger than the desired blade. The copper and tungsten layers are covered with coatings that are unaffected by electro-etching processes for removing unwanted portions of those layers. The portions of the copper and tungsten layers having outlines corresponding to the desired outlines of the copper and tungsten layers respectively of the desired blade are masked. The protective coating is removed from the remaining unmasked surfaces. The exposed portion of each layer is then removed by electro-etching.

3,735,188

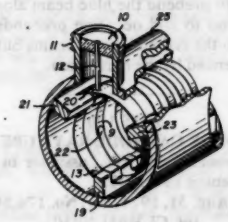
TRAVELING WAVE TUBE WITH COAX TO HELIX IMPEDANCE MATCHING SECTIONS

Charles Elmore Anderson, San Carlos, and Clarence Anthony Cardoza, Menlo Park, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

Filed July 3, 1972, Ser. No. 268,797

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 10 Claims



A traveling wave tube includes an elongated hollow cylinder of nonmagnetic metal which serves as a container and an elongated conductive wire helix of predetermined diameter which serves as a slow wave structure, located in the cylinder. A plu-

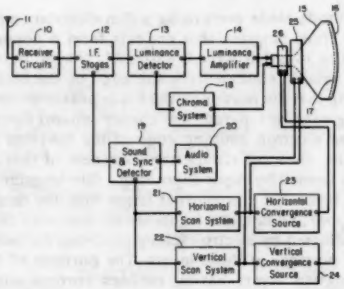
rality of straight elongated dielectric support rods of a length greater than the helix length are spaced about, contact, and extend along the inner walls of the cylinder substantially parallel with the axis of the cylinder. The rods contact the outer periphery of the helix and thereby support the helix concentric with the axis of the cylinder. A matching helix section of a relatively small number of turns and relatively short length is located at an end of the elongated helix and is supported by the support rods. A coaxial input connector includes a center conductor which extends into the metal cylinder and is connected to one end of the matching helix. The other end of the matching helix is connected to an end of the elongated helix. The matching helix is of a diameter larger than the diameter of the elongated helix to permit the turns of the matching helix to be more proximate the inner surface of the metal cylinder than the turns of the elongated helix and the matching helix includes indented portions which fold around each of said plurality of dielectric support rods.

3,735,189

BLUE DROOP CORRECTION CIRCUIT WITH A SINGLE SUPPLEMENTAL CORRECTION COIL

Steven Karlovics, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 19, 1971, Ser. No. 126,096
Int. Cl. H01j 29/50
U.S. Cl. 315—13 CG **7 Claims**



A supplemental dynamic field structure is associated primarily only with the blue gun of a tri-color cathode-ray tube having three guns in a delta array with the blue gun disposed above the plane of the red and green guns. The supplemental field structure is energized by the horizontal-frequency component of exciting current applied to the conventional blue dynamic convergence electromagnet, providing a field ahead of the principal convergence system which prebends the blue beam in an opposite sense to that of the principal convergence system. As used here, the expression "-blue beam" is intended to define the electron beam designated to excite the blue phosphor dots of the phosphor dot triads of the image screen.

The field of the supplemental electromagnetic structure may be confined to prebend the blue beam alone or it may be permitted to extend to and occasion prebending of reduced magnitude of both the red and green beams but in a sense opposite that experienced by the blue beam.

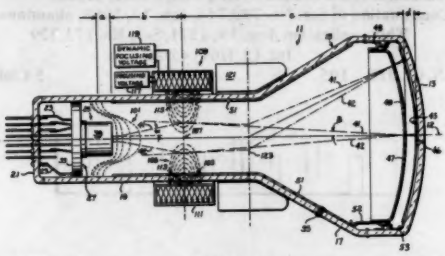
3,735,190

COLOR CATHODE RAY TUBE

Donald L. Say, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,502
Int. Cl. H01j 29/50
U.S. Cl. 315—13 CG **7 Claims**

A multiple beam color cathode ray tube utilizes a compact electron gun to provide a compact bundle of closely spaced individually controlled electron beams emergent from a common final anode. A neck related coating, at screen potential which is greater than the final anode potential, effects a divergent electron lens that influences the individual beams emerging from the common anode. External magnetic focusing means, positioned ahead of the gun, provides an internal con-



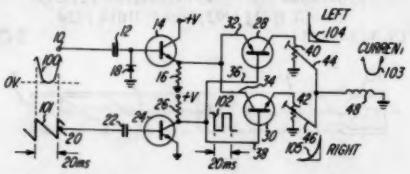
vergent magnetic focusing lens which influences the individual diverging beams by effecting convergence thereof at the apertures in the mask to produce a high resolution luminescent display in the patterned screen therebeneath.

3,735,191

DYNAMIC CONVERGENCE CIRCUITS

Rene Peter, Basel, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,384
Claims priority, application Great Britain, Apr. 27, 1970, 20,090/70
Int. Cl. H01j 29/50
U.S. Cl. 315—13 C **8 Claims**



A vertical rate dynamic convergence circuit for a multibeam color television kinescope incorporates a set of controls that permits adequate adjustment of the convergence currents to adapt the corrections afforded to the particular pattern of misconvergence errors encountered. The controls are associated with a pair of switching transistors which divide a parabolic voltage signal into substantially equal half portions. Such controls are effective to independently vary the amplitude of each half portion for combination in forming the convergence current. Master and differential controls are provided to cause beam convergence at most points of a scanned raster by confining the effects of each control to the red and green vertical convergence winding or to the blue vertical convergence winding, and to particular halves of the reproduced picture.

3,735,192

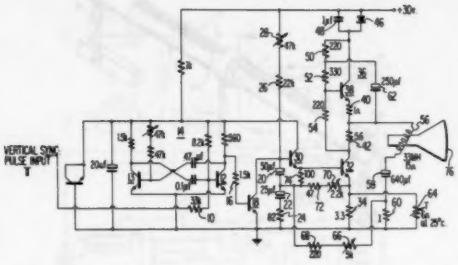
VERTICAL DEFLECTION CIRCUITS UTILIZING BOTH REGENERATIVE AND DEGENERATIVE FEEDBACK FOR GENERATING PARABOLIC VOLTAGES

Leslie Ronald Avery, Byfleet, England, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,864
Claims priority, application Great Britain, Apr. 22, 1970, 19,351/70
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD **7 Claims**

S-shaping is introduced into a sawtooth waveform by a combination of positive and negative feedback of separately ad-

justable, generally parabolic voltage waveforms so as to provide a suitable field (vertical) deflection signal for a wide deflection angle kinescope. Output and drive transistors are



cut off relatively rapidly at the end of scan and are returned to conduction at the beginning of scan by coupling capacitive elements in the sawtooth generating circuit to the inputs of the transistors.

3,735,193

DEFLECTION YOKE

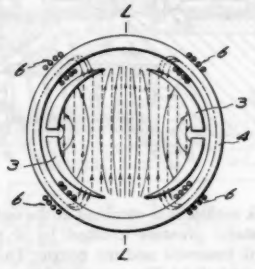
Hiroshi Ikeuchi, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1971, Ser. No. 212,059

Claims priority, application Japan, Dec. 26, 1970, 45/129602

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 XY **7 Claims**



A deflection yoke with four compensation coils which are provided at the core inside which a pair of horizontal deflection coils are mounted and act on the magnetic flux generated from said horizontal deflection coils to generate a compensation field which makes the horizontal deflection field pin cushion fields at both right and left areas of the beam scanning range and a barrel field at the middle area of the range.

3,735,194

ELECTRONIC SWITCHING CIRCUIT ARRANGEMENTS

Martin G. Humphreys, Aylesbury, England, assignor to Redifon Limited, London, England

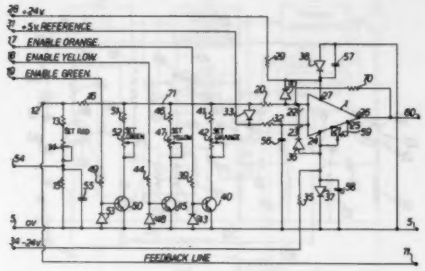
Filed Aug. 3, 1971, Ser. No. 168,679

Claims priority, application Great Britain, Aug. 14, 1970, 39,373/70

Int. Cl. H01j *29/52*

U.S. Cl. 315—30 **6 Claims**

An electronic, high-voltage switching arrangement for switching the final anode voltage of a beam-penetration type color C.R. tube. The arrangement comprises separate color-enable-signal voltage coding transistors, an I.C. transistor drive amplifier and a thermionic electron tube cathode-follower providing feedback from a tapped cathode potentiometer.



3,735,195

SPARK-DISCHARGE APPARATUS FOR ELECTROHYDRAULIC CRUSHING

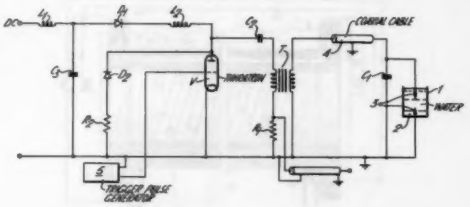
Elmer Thomas Jenkins, and Geoffrey Marcus Ward, both of c/o United Kingdom Atomic Energy Authority, 11 Charles 11 St., London, S. W. 1, England

Continuation-in-part of Ser. No. 748,695, July 30, 1968. This application Dec. 4, 1970, Ser. No. 95,145

Claims priority, application Great Britain, Aug. 7, 1967, 36,097/67; July 29, 1968, 4,890/68

Int. Cl. H05b *37/02*

U.S. Cl. 315—111 **4 Claims**



In existing apparatus of the above kind, a capacitor is discharged through the liquid-immersed gap via a self-triggered or externally triggered switch device. In the present invention an initially uncharged capacitor is connected directly across the gap without any intervening switch device. This first capacitor is pulse-charged to the breakdown voltage of the gap via a step-up pulse transformer by discharging a second capacitor via a triggered switch device through the primary winding thereof. The two capacitors are approximately matched in value, as reflected by the transformer ratio, so that substantially all the energy stored in the second capacitor is transferred to the first capacitor at peak voltage thereon. A principal advantage is that the triggered switch device, eg a thyratron, does not require either to withstand the high gap voltage or to carry the high gap current.

3,735,196

FLASHER CIRCUIT WITH OUTAGE INDICATION

John F. Bolinger, and Wilhelm K. Kolster, deceased, both of Michigan City, Ind. (by Christel E. Kolster, executrix) assignor to Meridian Industries, Inc., Southfield, Mich.

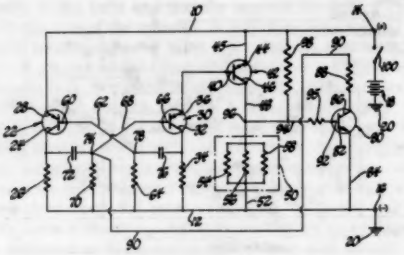
Continuation of Ser. No. 40,288, May 25, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,569

Int. Cl. H03b *3/282*; **H05b** *39/09*

U.S. Cl. 315—200 A **6 Claims**

A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timed pulse

signal to the power transistor for turning the power transistor "on"; and an additional transistor sensitive to the occurrence

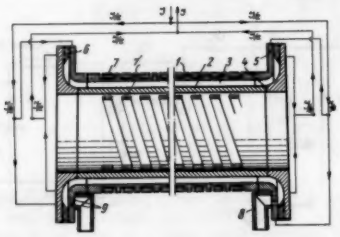


of an increased voltage drop across the load due to an outage is connected to the multivibrator for changing the time rate of the timed pulse signal.

3,735,197
RECTIFIER

Vadim Nikolaevich Pakin, Zhemchuzhnaya ulitsa 24, kv. 35, Novosibirsk, U.S.S.R.

Filed Aug. 13, 1971, Ser. No. 171,588
Int. Cl. H01j *17/14*
U.S. Cl. 315—348 **2 Claims**



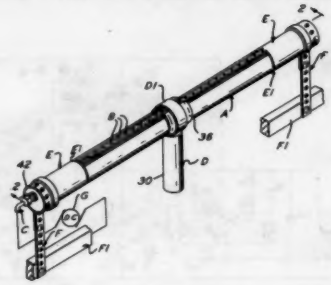
A rectifier which consists of two coaxial cylindrical electrodes separated by a working gap filled with a low pressure gas and which is controlled by a magnetic field having an axial component; said rectifier being provided with at least one control winding disposed on the external surface, with respect to the working gap, of any of the electrodes and fed with a pulse current, the duration of the current pulses being such that the control magnetic field is removed by the instant the working current pulse switched by the rectifier terminates.

3,735,198
ELECTROSTATIC DISCHARGE DEVICES WITH HIGH TEMPERATURE ARC RESISTANCE

Guy F. Barnett, Warminster; Warren W. Levy, Cynwyd, and Dolph Simons, Philadelphia, all of Pa., assignors to The Simco Company, Inc., Lansdale, Pa.

Filed Aug. 17, 1971, Ser. No. 172,499
Int. Cl. H05f *3/00*; H01t *19/04*
U.S. Cl. 317—2 F **8 Claims**

High voltage static discharge device utilizes an insulative body portion of conventional plastic material for supporting conductive discharge points and ceramic stand-offs resistant to high temperature deterioration from arcing to space the body portion from an adjacent ground. Conductive elements which are connected to the same high voltage as the points are incorporated between and isolate the body portion from the ceramic stand-offs so that all portions of the body portion are

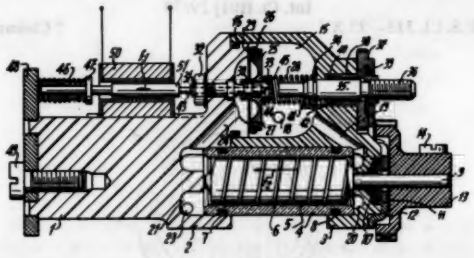


at substantially the same voltage whereas the high voltage is imposed across the stand-offs.

3,735,199
SUPPLY DEVICE FOR AN OUTLET NOZZLE IN AN INK JET WRITING METHOD

Enzo Ascoli, Lausanne, Switzerland, assignor to Paillard S.A., Sainte-Croix (Vaud), Switzerland

Filed Dec. 21, 1971, Ser. No. 210,481
Claims priority, application Switzerland, Jan. 6, 1971, 111/71; Apr. 30, 1971, 6394/71
Int. Cl. G01d *15/18*
U.S. Cl. 317—3 **9 Claims**



A convex ink meniscus is obtained at the outlet of the nozzle by hydrostatic pressure created by a pump situated between the ink reservoir and the nozzle. The ink jet is obtained by an electric field. The pump is of the continuous type, means being provided to reduce the operational pressure at the level of the nozzle from the value necessary to create a convex meniscus to a value for which the ink remains substantially contained inside the nozzle. A control device acts on these means to render them inoperative and ensures the re-establishment of the meniscus-forming pressure at the beginning of each period of writing. The pump may have a member having a surface of revolution in which a spiral passage is hollowed, a second member with a second surface of revolution is applied against the first and movable by electromagnetic means.

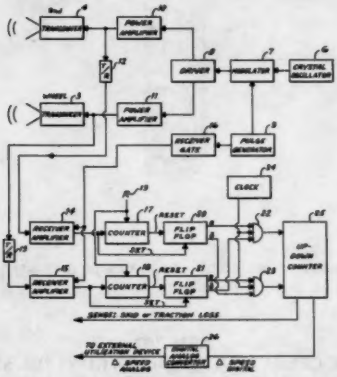
3,735,200
WHEEL SLIP SENSOR

Jacob A. Kritz, Westbury, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 8, 1971, Ser. No. 205,960
Int. Cl. B60t *8/06*
U.S. Cl. 317—5 **7 Claims**

Slippage of a drive wheel in a land vehicle is detected by means of doppler shifts induced in pulsed ultrasonic beams. First and second transducers transmit bursts of ultrasonic

energy which are directed at the wheel surface and the ground surface, respectively. The doppler shifted return pulses are detected by respective transducers and processed in separate channels. Counters in each channel generate gate signals indicative of the length of time that is required for the corresponding transducer to receive a predetermined number of cycles of reflected energy. An up-down counter operates from a high frequency clock in response to the two gate signals. The difference in duration of the two gate signals leaves a differential count accumulated in the up-down counter which represents the slip between wheel and ground surfaces.



3,735,201

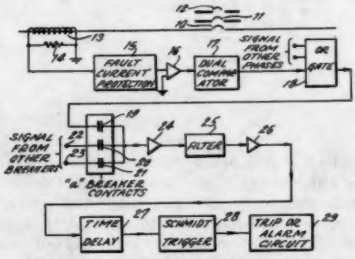
ARCING TIME RELAY

William E. May, Levittown, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 18, 1972, Ser. No. 272,724

Int. Cl. H02h *7/22*

U.S. Cl. 317—11 R **10 Claims**



An arcing time relay is provided for vacuum circuit breakers, and measures the length of time that arcing occurs after the circuit breaker contacts are open, or measures the time that excessive leakage current flows while the contacts are open, and provides an output signal if arcing time or leakage current exceeds given bounds which indicate improper vacuum conditions.

3,735,202

MOTOR CONTROL SYSTEM WITH POWER FAILURE PROTECTOR

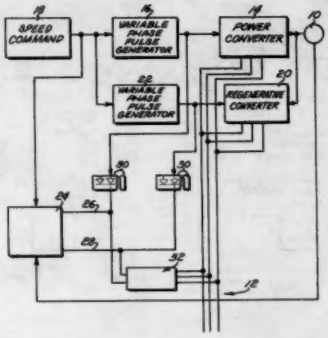
James W. Grygera, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed July 26, 1971, Ser. No. 165,894

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 R **21 Claims**

Motor control system in which a signal is derived indicating zero voltage on the line to the motor. The signal is applied to two inputs of logic means. One input resets itself with a time delay and if the other input still has the signal applied thereto the energizing circuit for the motor is inhibited.



3,735,203

PROTECTIVE CIRCUIT

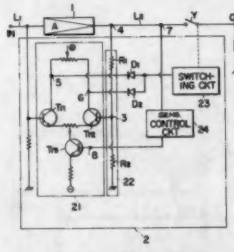
Seijiro Fujie, Yokohama, and Yoshifumi Saeki, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed , Ser. No. 199,182

Claims priority, application Japan, Nov. 16, 1970, 45/113494

Int. Cl. H02h *3/28*

U.S. Cl. 317—27 R **3 Claims**



A protective circuit for protecting an output circuit and a load circuit of a signal amplifier from abnormal conditions, and including a differential amplifier for detecting the abnormal conditions, and a sensitivity control circuit for reducing the amplification factor of the differential amplifier for the input signal so that the output signal of the signal amplifier is clipped.

3,735,204

CIRCUIT ARRANGEMENT FOR DETERMINING THE DISTANCE OF FAULT LOCATIONS IN LINE SHORT-CIRCUITS

Eckart Maenicke, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 25, 1971, Ser. No. 156,733

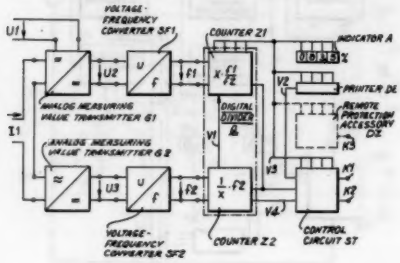
Claims priority, application Germany, June 26, 1970, P 20 32 578.4

Int. Cl. H02l *3/28*

U.S. Cl. 317—27 R **17 Claims**

In a circuit arrangement for determining the distance of the fault location during short-circuits on a line, an analog measuring data transmitter used for obtaining a direct voltage which is proportional to the line voltage and another analog measuring data transmitter which is influenced by the line cur-

rent used to obtain another DC voltage proportional to the line current, are connected to the input of a voltage-frequency converter connected to a device for digital division or quotient



formation. The device has a control circuit which, upon the occurrence of a short-circuit, initiates the measurement or determination of the distance of the fault location, in response to an initiating signal.

3,735,205

HOLDER FOR ELECTRICAL AND/OR ELECTRONIC COMPONENTS

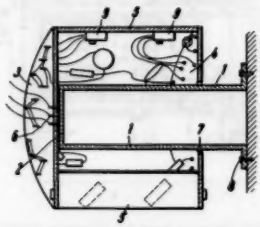
Karl-Dieter Friedrich, Berlin 27, Germany, assignor to Schleicher GmbH & Co. Relaisbau KG, Berlin, Germany

Filed Apr. 2, 1971, Ser. No. 130,588

Claims priority, application Germany, Apr. 27, 1970, P 20 21 978.7

Int. Cl. H05k *7/20*

U.S. Cl. 317—100 **2 Claims**



An inexpensive and easily made holder for electrical and/or electronic components of motor-driven time relays consists of a cage-like structure surrounding the motor casing and consisting of parallel plates of insulating material on which some at least of the components are located, with interposed spacers of thermally conducting material; one or more of the plates having a central aperture enabling it to be fitted over the casing of the electric motor while an end solid plate of the cage abuts against the end of the motor casing. The thermally conducting spacers can be used as heat sinks for transistors.

3,735,206

CIRCUIT BOARD PACKAGE WITH WEDGE SHAPED COVERS

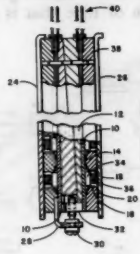
Clarence T. Pesek, Anoka, Minn., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 28, 1971, Ser. No. 193,456

Int. Cl. H05k *5/03, 7/20*

U.S. Cl. 317—100 **5 Claims**

A circuit board mounting and packaging technique wherein each board is encased within a wedge-shaped foam package



and the packages are combined in complementary pairs and inserted in chassis compartments.

3,735,207

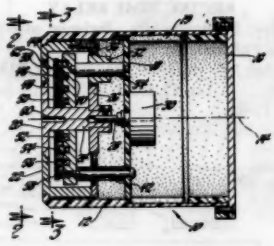
VEHICLE OPERATION INHIBITOR CONTROL SYSTEM

Paul D. Agarwal, Birmingham; Richard W. Johnson, Troy, and John G. Neuman, Grosse Pointe, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,144

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **5 Claims**



A manually operable switch mechanism for enabling a control device which normally inhibits operation of the vehicle includes inner and outer rotatably supported concentrically mounted plate members provided with slots adapted to receive the vehicle ignition key. The inner and outer members are coupled so that rotation of the inner member in one direction produces rotation of the outer member in the opposite direction to reorient the positions of the slots in the two members. Circuitry is provided for energizing the control means and permitting operation of the vehicle in response to insertion of the ignition key in the slot in a predetermined sequence and within a predetermined time duration.

3,735,208

THERMAL FATIGUE LEAD-SOLDERED SEMICONDUCTOR DEVICE

Arthur Edward Roswell, Somerville, N.J., and Gerald Kenneth Clymer, Sellersville, Pa., assignors to RCA Corporation, New York, N.Y.

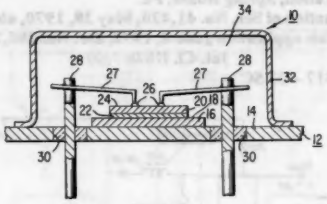
Filed Aug. 26, 1971, Ser. No. 175,196

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **7 Claims**

The device includes a semiconductor die joined to a thermally conductive substrate with a solder having a high lead

content. An enclosure surrounds the die and is sealed to the



substrate. A substantially nonoxidizing atmosphere is provided within the enclosure.

3,735,209

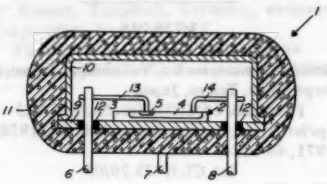
SEMICONDUCTOR DEVICE PACKAGE WITH ENERGY ABSORBING LAYER

Ivan R. Saddler, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 10, 1972, Ser. No. 225,043

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R **5 Claims**



There is disclosed a semiconductor device comprising a body of semiconductor material having at least one region of P conductivity type and a second region of N conductivity type defining a P-N junction therebetween. The body is bonded to a header having electrically isolated terminals extending therefrom. A lead wire is bonded to at least one of said conductivity regions and to one of said terminals. A closure member is secured to said header and the closure member and the header are surrounded by an energy absorbing layer of high atomic number particle impregnated resilient material. The particles have a diameter of between 0.25 and 1.0 mil and are approximately 50 percent by volume of said layer. The resilient material is preferably a highly plastisized polyvinyl chloride and the high atomic number particles are preferably tungsten carbide.

3,735,210

ZENER DIODE FOR MONOLITHIC INTEGRATED CIRCUITS

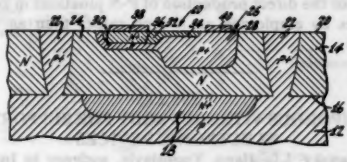
Israel Haim Kalish, Plainfield, and Heshmat Khajezadeh, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 831,883, June 6, 1969, abandoned. This application June 7, 1971, Ser. No. 150,795

Int. Cl. H01l 9/00

U.S. Cl. 317—234 R **4 Claims**

An improved zener diode for monolithic integrated circuits includes a first diffused region of one type conductivity having two portions, one of which portions has a significantly higher maximum impurity concentration than the other portion. A second diffused region of opposite type high conductivity is disposed within both portions of the first region and is separated from each by a PN junction, the PN junction between the second region and the lower conductivity portion being at a significantly greater depth than the PN junction between the second region and the high impurity concentration portion. The electrical contact to the second region is



made only over the lower impurity concentration portion where the PN junction is at a significantly greater depth.

3,735,211

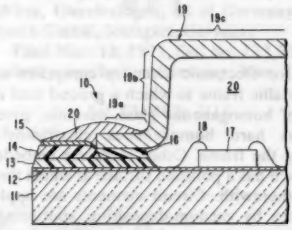
SEMICONDUCTOR PACKAGE CONTAINING A DUAL EPOXY AND METAL SEAL BETWEEN A COVER AND A SUBSTRATE, AND METHOD FOR FORMING SAID SEAL

Demetrios E. Kapnias, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corporation, Montain View, Calif.

Filed June 21, 1971, Ser. No. 155,174

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R **9 Claims**



A cover is hermetically sealed to a substrate by first joining the cover to the substrate by epoxy and then soldering the exposed edge of the cover to a metal film on the substrate to provide an hermetic seal. The epoxy prevents flux used during the soldering operation from entering the cavity formed between the cover and substrate and there degrading the performance of any semiconductor device placed in the cavity.

3,735,212

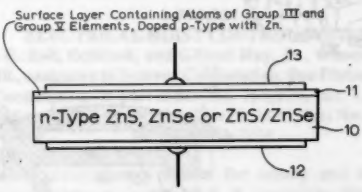
P-N JUNCTION SEMICONDUCTOR DEVICES

Zoltan K. Kun, Lincolnwood, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 118,744, Feb. 25, 1971, Pat. No. 3,705,059, which is a continuation-in-part of Ser. No. 819,960, April 28, 1969, abandoned. This application Feb. 2, 1972, Ser. No. 222,772

Int. Cl. H01l 3/22

U.S. Cl. 317—234 R **2 Claims**



To produce a P-conductivity type wide band gap semiconductor material, a III–V compound semiconductor layer is first vacuum evaporated onto and then diffused into a crystal-

line II–VI compound semiconductor substrate, specifically a zinc chalcogenide. The resulting crystalline material is doped by simultaneous or sequential infusion of zinc atoms in substitution for atoms of the Group III element. The process may be used for the direct production of P-N junctions in zinc chalcogenides by employing an N-type rather than an intrinsic substrate.

3,735,213

A NONPOROUS VITREOUS BODY FOR SUPPORTING ELECTRONIC DEVICES

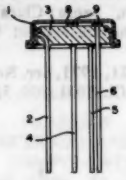
Evgen Kansky, Ljubljana, Yugoslavia, assignor to Institut za Elektroniko in Vakuumsko Tehniko, Teslova, Ljubljana, Yugoslavia

Filed Aug. 10, 1970, Ser. No. 62,459

Claims priority, application Yugoslavia, Aug. 8, 1969, P 2068/69

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **2 Claims**



A support for electronic circuitry comprises a generally cylindrical metallic frame to which a ground lead is attached and a body of homogeneous glass, ceramic, pyroceram or other vitreous hard homogeneous electrically insulated material filling the frame. Other leads are embedded in the glass layer which has a polished surface at which the leads terminate flush therewith. Circuit elements are applied to the polished surface by vacuum-depositing, sputtering or print-circuit techniques and the entire assembly is closed in a can. The method involves heating a plug of the vitreous material to fill the frame, grinding the surface of the resulting vitreous body and optically polishing same to receive the circuit elements.

3,735,214

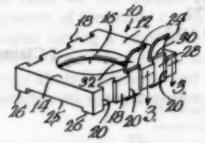
A HEADER FOR MOUNTING CIRCUIT ELEMENTS FOR INCORPORATION IN AN ELECTRIC CIRCUIT

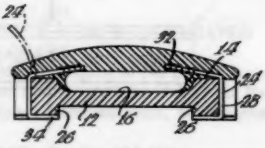
John O. Renskers, and Charles E. Jensen, both of Crystal Lake, Ill., assignors to Collcraft Inc., Cary, Ill.

Filed Jan. 27, 1972, Ser. No. 221,364

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **11 Claims**





A miniature component mounting header for those circuit elements which do not lend themselves to printed or to IC fabrication, for connection into hybrid micorcircuits.

3,735,215

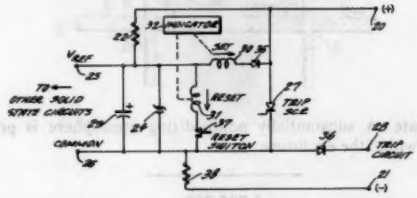
SELF-POWERED RELAY TARGET CIRCUIT

Richard R. Conrad, Bristol, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Continuation of Ser. No. 41,420, May 28, 1970, abandoned. This application June 8, 1972, Ser. No. 260,750

Int. Cl. H02b *7/00*

U.S. Cl. 317—33 SC **3 Claims**



A relay target circuit is operated directly from the stored energy in a solid state relay circuit, after the relay circuit becomes conductive. Circuits are provided in which a-c and d-c control voltage sources are used and in which a diode is connected to the trip circuit to prevent a false set signal by transients in the tripping circuit. Parallel indicator circuits are used with a common reset switch.

3,735,216

MOTOR CONTROL SYSTEM

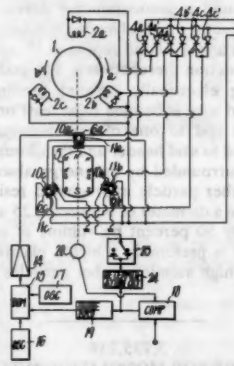
Saburo Uemura, Kanazawa-ku, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 14, 1972, Ser. No. 225,923

Claims priority, application Japan, Feb. 13, 1971, 46/6323; Feb. 13, 1971, 46/6324

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **18 Claims**



A motor control system including a modulator consisting of a saturable reactor, a magnet means and a control means. The magnet means produces a magnetic flux to be supplied to the reactor, which is controlled by the control means, so that the switching means is controlled through the magnet means by the saturable reactor.

3,735,217

TWIN MOTOR DRIVE SYSTEM

Lee A. Kilgore, Export; Bernard S. Stralt, Jr., and Eugene C. Whitney, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

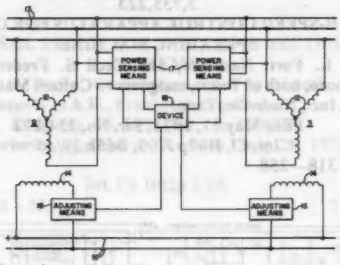
Filed Nov. 1, 1971, Ser. No. 194,746

Int. Cl. H02p *5/50*

U.S. Cl. 318—100 **5 Claims**

A twin motor drive system having two synchronous motors

of usual construction driving a common load. Means are provided for controlling the field excitation of the motors in a manner to maintain equal division of the load.



3,735,218

DEVICE FOR THE COMPARISON OF TWO PULSE-SERIES FREQUENCIES

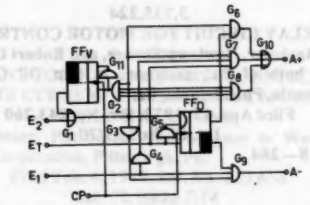
Heinz-Peter Kunert, Tangstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,564

Claims priority, application Germany, Aug. 8, 1970, P 20 39 557.7

Int. Cl. H03k *5/20, 9/06*

U.S. Cl. 328—134 **6 Claims**



A plurality of interconnected AND-gates and flip-flops provide a first output pulse in response to an input pulse series having a frequency higher than a fixed frequency source and a second output in response to a measuring pulse series having a frequency lower than the fixed frequency source. Inputs to the device include a clock pulse signal and a timing pulse signal, both synchronized with the fixed frequency pulse source.

3,735,219

THERMAL PROTECTION DEVICE FOR LINEAR MOTOR

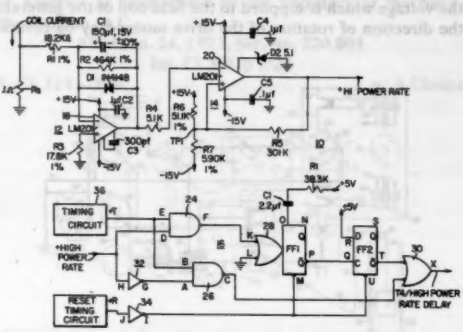
Michael Edwin Kahn, Palo Alto; William Frank Krajewski, Los Altos Hills, and Terry Gordon Johnson, San Jose, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Aug. 25, 1971, Ser. No. 174,809

Int. Cl. H02k *41/02*

U.S. Cl. 318—135 **13 Claims**

Thermal protection apparatus is disclosed for electrical motors and, in particular, for a linear motor as, for example, the type used in magnetic disc recording drive systems. An electrical circuit, the analog of the thermal characteristics of the armature coil, provides electrical signals indicative of the temperature of the armature coil. Safety or protection means responsive to these electrical signals maintains the motor armature coil below a safe, predetermined level, by, in the preferred embodiment, reducing the average power input to the motor.



3,735,220

CONTROL CIRCUIT FOR A D.C. MOTOR

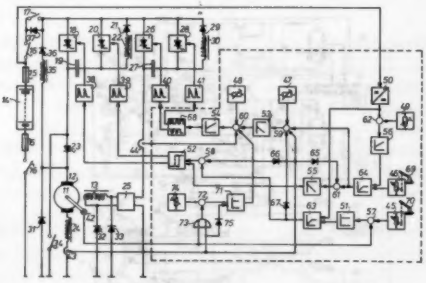
Stefan Renner, Silberberg; Wulf Bayha, Hoefingen; Alwin Burgholte, Geisingen; Holger Schweizer, Stuttgart, and Rainer Wirtz, Uterriexingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 12, 1971, Ser. No. 123,529

Claims priority, application Germany, Mar. 14, 1970, P 20 12 230.9

Int. Cl. H02p *3/14*

U.S. Cl. 318—139 **12 Claims**



The field and armature currents are for the shunt-wound vehicle motor and are controlled in dependence on signals representing the actual and desired operating states of the motor. A series-connection regulating stage is provided for giving the motor a series-connection characteristic during acceleration up to a predetermined nominal speed.

3,735,221

ELECTRICAL HOIST CONTROL SYSTEM

Hans K. Bell, Oshkosh, and Gilbert Hay, Jr., Wauconda, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.

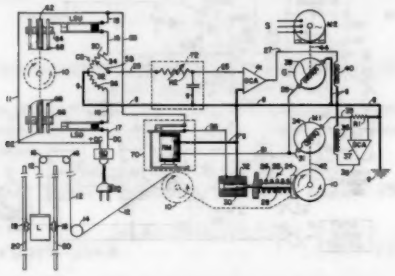
Continuation-in-part of Ser. No. 766,270, Oct. 9, 1968, abandoned. This application Mar. 8, 1971, Ser. No. 121,772

Int. Cl. H02k *7/34*

U.S. Cl. 318—151 **9 Claims**

An electrical control system for raising and lowering a drum-and-cable supported load. A reversible shunt wound drive motor which is connected to the drum is operable under the control of a continuously driven shunt wound generator. By measuring the amount of current flowing in the armature coil of the drive motor and varying the flow of current in the

field coil thereof in relation to such armature current, the speed of the drive motor will become a direct function of the load which is placed on the latter. By reversing the polarity of the voltage which is supplied to the field coil of the generator, the direction of rotation of the drive motor may be reversed



without disturbing the relationship between the load and the motor speed. Thus, whether the load is rising or descending, the greater its magnitude, the slower its speed. An electromechanical brake arrangement becomes automatically effective to lock the cable drum in a fixed position when load speed drops substantially to zero.

3,735,222

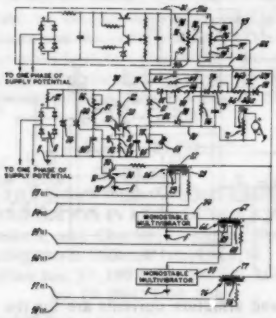
SPEED CONTROL SYSTEM FOR ALTERNATING CURRENT INDUCTION MOTORS

Bohdan I. Pryjmak, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1971, Ser. No. 170,765

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **4 Claims**



A speed control system for alternating current induction motors wherein a reference potential, which is a rectified phase of the alternating current supply potential, is connected across the series combination of a charge circuit resistor and the timing capacitor of a unijunction transistor type relaxation oscillator circuit and a direct current control potential, which is a function of motor speed, is connected across the charge circuit resistor through a speed control resistor in series. The unijunction transistor type relaxation oscillator circuit and associated circuitry produces a trigger signal at the electrical angle of each potential cycle of each phase of the alternating current supply potential as determined by the difference of magnitude between the reference potential and the control potential impressed across the charge circuit resistor which trigger respective silicon controlled rectifiers conductive to complete an energizing circuit for the corresponding phase winding of the motor. An external source of electrical signals which vary in magnitude in response to changes of conditions which require a change of motor speed is connected across the speed control resistor for varying the speed of the controlled motor.

3,735,223

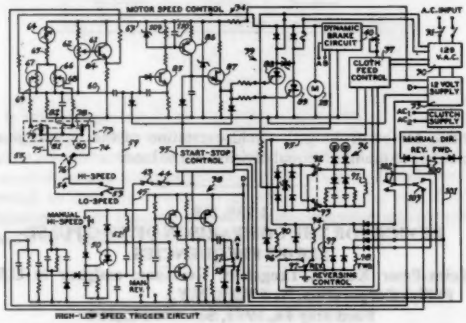
HIGH-SPEED CONTROL APPARATUS FOR CLOTH SPREADING MACHINE

Johnny L. Fort, Nashville, and Cecil S. Frederick, Murfreesboro, both of Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed May 17, 1972, Ser. No. 254,272

Int. Cl. H02p *7/00;* **B65h** *29/46*

U.S. Cl. 318—258 **6 Claims**



An electrically driven and controlled cloth spreading machine including means for controlling the high and low speeds of the machine, and also for selectively controlling and presetting high speeds of the machine in its forward and reverse directions of movement.

3,735,224

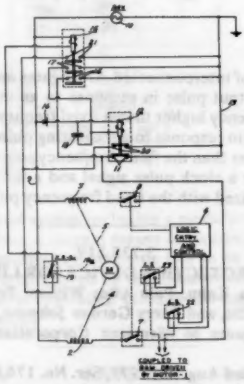
RELAY CIRCUIT FOR MOTOR CONTROL

Henry L. Bachofer, Newtown Square, and Robert C. C. Chang, Wayne, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Apr. 12, 1972, Ser. No. 243,260

Int. Cl. Ho2p *3/20*

U.S. Cl. 318—284 **6 Claims**



In order to precisely position a machine driven by a rotating prime mover, the prime mover (electric motor) is electrically reversed to bring it to a stop. A zero speed switch, mounted on the motor shaft, senses when the shaft comes to a stop and at that time deenergizes a relay to open a pair of contacts in series with the motor contactor to stop the motor. The switch also opens the circuit to the winding of a slow-acting relay

which, after a time delay, closes a pair of contacts connected in parallel with the previously-mentioned contacts, to prepare the motor for the next operation.

3,735,225

CONTROL DEVICE FOR SWITCHING RECTIFIER SYSTEMS

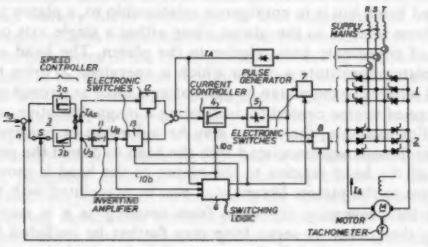
Eckart Raatz, Berlin, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed Aug. 25, 1971, Ser. No. 174,736

Claims priority, application Germany, Aug. 28, 1970, P 20 43 709.0

Int. Cl. H02p 5/16

U.S. Cl. 318—332 **3 Claims**



In a system for directing a current controller of the type employing two groups of controlled rectifiers for delivering current in respectively opposite directions, the system including a current controller for directly operating the rectifiers and a higher order controller connected for influencing the current controller and having an integrating component, means are provided for blocking the integrating component input during the changeover of operation from one rectifier group to another.

3,735,226

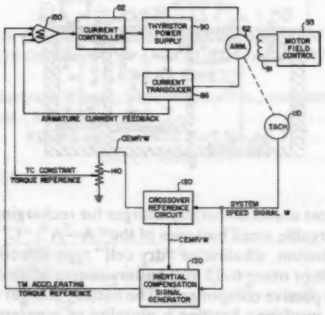
CONSTANT TORQUE AND INERTIA CONTROL FOR ARMATURE CURRENT REGULATED DC MOTOR WITH FIELD WEAKENING

John R. Pittner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,638

Int. Cl. H02p 7/14

U.S. Cl. 318—338 **9 Claims**



Constant and acceleration torque (inertia) compensating signals are combined with armature current feedback to develop a current control signal for regulating the armature current of a direct current motor so that output torque both is kept constant for and weakened motor shunt fields, and during system speed changes.

3,735,227

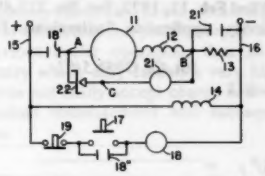
DIRECT CURRENT MOTOR STARTER CIRCUIT

George H. Gill, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1972, Ser. No. 220,001

Int. Cl. H02p 1/20

U.S. Cl. 318—394 **6 Claims**



A starting circuit for a direct current motor employs a zener diode to sense the back e.m.f. The zener diode is connected to a switch which effectively disconnects a current limiting impedance out of the armature circuit when the motor has obtained operating speed. In one arrangement, two zener diodes are used in combination to provide an adjustable control for the switching point. Another disclosed arrangement includes a current amplifier connected between the zener diode and the switch to provide for operation of the switch having a relatively high operating power requirement.

3,735,228

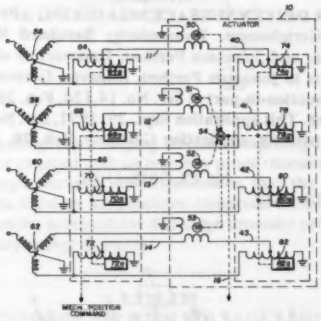
NON-ELECTRONIC SERVO ACTUATOR

William G. Redmond, Dallas, Tex., assignor to E-System, Inc., Dallas, Tex.

Filed Jan. 3, 1972, Ser. No. 215,064

Int. Cl. G05b 9/02

U.S. Cl. 318—564 **17 Claims**



In a multiplex channel actuator for developing a linear output motion four servomotors are coupled together in a velocity summing arrangement to produce the required output. Each of the servomotors of the actuator has a control phase winding and a fixed phase winding with the latter connected to a source of energizing AC voltage. The control phase winding of each channel servomotor is interconnected as part of a balanceable circuit including an input movable core transformer and a feedback movable core transformer. A mechanical input motion positions the movable core of the input transformer to generate a control voltage related to the input motion. This voltage, in each of the actuator channels, causes the respective servomotor to be energized thereby developing a mechanical output motion. The mechanical output motion positions the movable core of the feedback transformer, for each actuator channel, to develop a feedback voltage for balancing out the input transducer voltage. Each channel servomotor continues to run until the voltage at the input

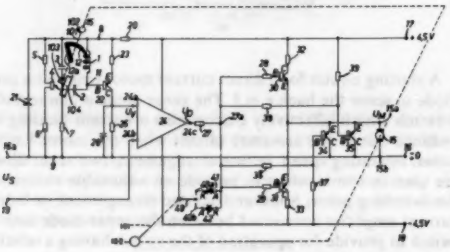
transducer is balanced by a voltage from the feedback transducer.

3,735,229

ELECTRICAL OSCILLATING SERVO MOTOR CONTROL CIRCUIT ARRANGEMENT

Ingo Brockmuller, Uerikon, Switzerland, assignor to EMA AG, Meilen, Switzerland

Filed Feb. 11, 1972, Ser. No. 225,496
Claims priority, application Switzerland, Feb. 18, 1971, 2342/71
Int. Cl. G05b 5/01
U.S. Cl. 318—611 2 Claims



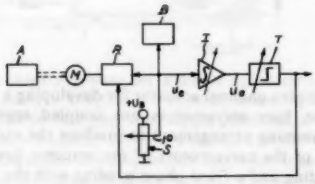
An electrical oscillating circuit arrangement with variable degree of damping, comprising an oscillating or tank circuit incorporating an inductive circuit element, and an eddy current body which can be introduced into the magnetic field of said inductive circuit element for changing the degree of damping.

3,735,230

MOTOR DRIVEN SURFACE MEASURING APPARATUS

Werner Gerighausen, Ronnenberg; Bernhard Heimbrecht, Garbsen, and Johannes Perthen, Hanover, all of Germany, assignors to Johannes Perthen, Hanover, Germany

Continuation-in-part of Ser. No. 14,124, Feb. 25, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,681
Claims priority, application Germany, Feb. 26, 1969, P 19 09 683.4
Int. Cl. G05b 11/01
U.S. Cl. 318—637 3 Claims



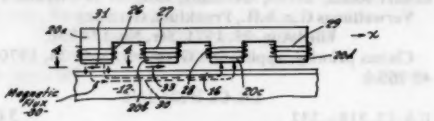
A sensing element and a surface to be measured are moved relative to one another at a controllable speed and throughout a controllable distance, and at least one electrical driving motor is provided for performing such movement. A source of reference voltage is applied to a regulator for maintaining the speed of rotation of the driving motor proportional to the reference voltage. An integrator is connected to measure the speed of rotation of the driving motor and produces an electrical output proportional to the time integral of such speed, a trigger circuit being connected to the output of the integrator.

3,735,231

LINEAR MAGNETIC DRIVE SYSTEM

Bruce A. Sawyer, 20120 Allentown Drive, Woodland Hills, Calif.

Filed June 28, 1971, Ser. No. 157,558
Int. Cl. G05b 11/00
U.S. Cl. 318—687 33 Claims



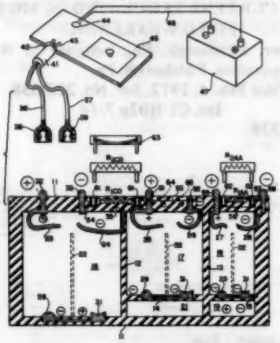
This invention relates to a system in which a head is displaced from, but is in contiguous relationship to, a platen and is driven relative to the platen along either a single axis or a pair of coordinate axes relative to the platen. The head and the platen constitute a motor which is energized to drive the head relative to the platen by generating a force as a result of a change of vector caused by translating a magnetomotive vector. For example, the motor may be induction or hysteresis motor. Means are associated with the head to detect the position of the head relative to the platen as the head is moved relative to the platen. Means may also be associated with the head for preventing the head from rotating as it is moved along the platen. A servo loop may further be included for producing controlled displacements of the head relative to the platen.

3,735,232

LOW COST UNIVERSAL BATTERY CHARGER FOR SMALL TYPE NICKEL-CADMIUM OR ALKALINE BATTERIES

Karoly G. Fister, 5701 Louise Drive, Mentor, Ohio

Filed June 8, 1971, Ser. No. 151,078
Int. Cl. H01m 45/04
U.S. Cl. 320—2 10 Claims



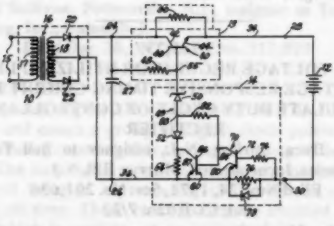
A low cost universal battery charger for recharging different size rechargable small batteries of the "A—A", "C", and "D" nickel-cadmium, alkaline or "dry cell" type directly from an automobile or other 6–12 volt battery source of direct current using only passive components. The battery charger comprises a molded insulating housing a plurality of separate different size compartments each dimensioned to receive respective different ones of the small batteries to be recharged. Internal contacts are secured within each of the compartments for physically engaging the terminals of the respective size batteries to be recharged in that compartment and to establish a closed electrical circuit through the battery. External contacts are mounted on the exterior of the insulating housing and are electrically connected to respective ones of the internal con-

tacts for connecting the different size batteries disposed in the compartments in circuit relationship with a recharging direct current voltage source that preferably comprises an automobile battery of 6–12 volt rating. Conductors having readily detachable terminal connectors serve to connect the external contacts to the automobile battery serving as a recharging direct current voltage source to thereby energize the different size battery receiving compartments within the housing. A plurality of different value current adjusting (voltage dropping) resistors preferably are molded within the battery housing and means are provided for selectively connecting a desired value current adjusting resistor in circuit relationship with the automobile battery recharging direct current voltage source and the internal contact means of the different size battery receiving compartments for adjusting the value of the charging current supplied to each of the compartments to a preselected desired value in accordance with the rating of the small battery to be recharged in that compartment. Additionally, plug-in resistors and suitable receptacles are provided in certain forms of the invention for connecting additional resistors in parallel circuit relationship with the molded-in current adjusting resistors for appropriately adjusting the current value supplied to a given battery receiving compartment to a different current value whereby the battery receiving compartment can accommodate batteries of the same physical size but requiring different value recharging currents. Also, a second receptacle can be formed in the insulating housing for receiving detachable thermally sensitive switches which are connected in series circuit relationship with the internal contacts of at least one of the battery receiving compartments whereby the thermally sensitive switch physically senses the temperature of the battery being recharged and interrupts the recharging current upon an over-temperature condition being sensed. If desired the thermally sensitive switch can be permanently built into the battery recharger rather than making it in the form of a detachable attachment and preferably comprises a bimetal switch. In still a different form of the invention the plurality of different value current adjusting resistors are comprised by resistive cables which have different values of resistance and also serve as the conductor for selectively connecting the external contacts to the automobile battery serving as a recharging direct current voltage source. In still another form of the invention, the plurality of different value current adjusting resistors is comprised by a single multi-tap resistor and a selector switch is provided for connecting a desired value of current adjusting resistance in circuit relationship with the automobile battery serving as the recharging direct current voltage source and the internal contacts of a selected one of the different size battery receiving compartments.

3,735,233
BATTERY CHARGER APPARATUS HAVING MULTIPLE MODES OF OPERATION AND AUTOMATIC SWITCHING THEREBETWEEN

Richard Bertrem Ringle, Shorewood, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 24, 1970, Ser. No. 66,187
Int. Cl. H02j 7/10
U.S. Cl. 320—24 **3 Claims**

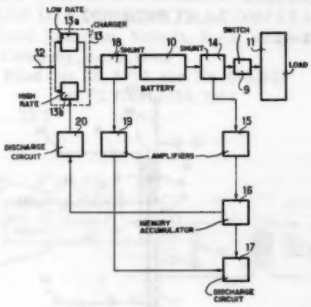


A battery charging device is disclosed which charges a normal battery first in a constant current mode to a first intermediate terminal voltage, then in a modulated mode to a predetermined maximum terminal voltage, and then in a standby mode at a third predetermined float voltage. When the battery is attached to the charger in the standby mode and the terminal voltage falls below a predetermined level, the charger is automatically recycled to recharge the battery. If the charge cycle is interrupted by a momentary line voltage failure or other external malfunction, the charge cycle resumes when the malfunction is corrected. A small current is applied to any battery connected to the circuit regardless of its state of charge or the immediate past history of the charger or battery in previous cyclic operation; thus an abnormally discharged battery which may exhibit a very high input impedance and does not easily accept charge is charged by this device for gradual reinstatement and subsequent normal cyclic operation.

3,735,234
APPARATUS FOR RECHARGING AN EMERGENCY BATTERY

Pierre Godard, Tremblay-les-Gonesse, France, assignor to Societe des Accumulateurs Fix et de Traction, Romainville, France

Filed Apr. 26, 1972, Ser. No. 247,684
Claims priority, application France, Apr. 30, 1971, 7115676
Int. Cl. H02j 7/04
U.S. Cl. 320—44 **9 Claims**



Battery emergency charging device comprising a memory accumulator charged with an intensity proportional to the battery discharge intensity, characterized in that the discharge circuit of the memory accumulator comprises means for making the memory accumulator discharge intensity proportional to the battery charge intensity.

3,735,235
DC TO DC CONVERTER WITH VOLTAGE REGULATION FEEDBACK LOOP ACHIEVING ISOLATION BETWEEN INPUT AND OUTPUT BY TIME DOMAIN TECHNIQUES

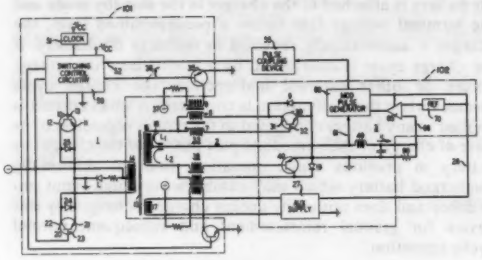
Billy Harold Hamilton, Summit, and Helmut Wilhart, Whippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 19, 1971, Ser. No. 190,594
Int. Cl. H02m 3/32
U.S. Cl. 321—2 **9 Claims**

A DC to DC converter includes a digital type voltage regulation control circuit which permits complete isolation between the input and output circuits. The regulation signals comprise timing pulses coupled by a pulse transformer from voltage monitoring circuitry on the output side of the converter to switching control circuitry on the input side of the converter.

The rectifier of the converter utilizes synchronous rectifying transistors driven by a proportional base drive arrangement which utilizes the regenerative action of a current transformer to transform the collector current of the transistor into a base

drive current. This proportional base drive arrangement includes a third stored charge sweep-out winding and a diode to



permit high frequency operation of the converter rectifier with low voltage high current saturation transistors.

3,735,236

TV HORIZONTAL OSCILLATOR HAVING A STABILIZED AUXILIARY DC OUTPUT

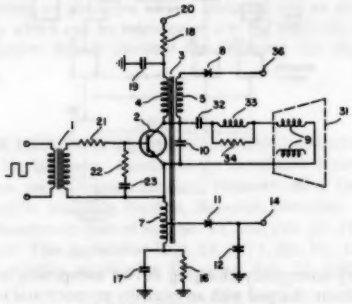
Heinz Richter, and Werner Thiele, both of Kronach, Germany, assignors to Loewe-Opta GmbH, Berlin, Germany

Filed Jan. 14, 1972, Ser. No. 217,767

Claims priority, application Germany, Jan. 16, 1971, P 21 03 501.8

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **4 Claims**



A TV horizontal oscillator having an output transformer is arranged to supply a principal AC output to the horizontal deflection yoke of a picture tube. In order to provide stabilized DC voltage to other transistor stages in the TV receiver, an auxiliary winding of the transformer is connected in series with the parallel combination of a resistance and a capacitance. A voltage proportional to the difference between the voltage across at least a portion of the auxiliary winding and that across the resistance-capacitance combination is rectified and filtered. The resulting DC output is substantially insulated from changes in current through the output transformer caused, e.g., by beam-current induced changes in the width of the TV picture.

3,735,237

CYCLE CONVERTER POWER SUPPLY FOR MICROWAVE HEATING

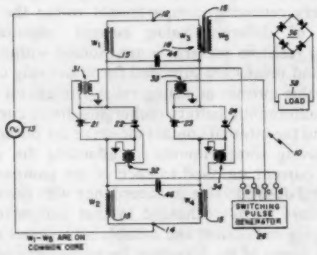
Palmer P. Derby, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 1, 1971, Ser. No. 177,026

Int. Cl. H02m *7/00*

U.S. Cl. 321—6 **17 Claims**

A cycle converter power supply circuit comprising four silicon controlled rectifiers (SCR's), electronic semiconductor switches, used to program current flow through four separate legs of a transformer in a manner to produce an alternating current at a frequency considerably in excess of the prime power. A bridge rectifier circuit in the secondary of the transformer permits the power to be converted to a direct current



flow similar in character to what would be achieved through rectification of the prime power. Since the voltage conversion is accomplished at a higher frequency than the prime power, the core area of the transformer can be reduced roughly by the square root of the switching frequency.

3,735,238

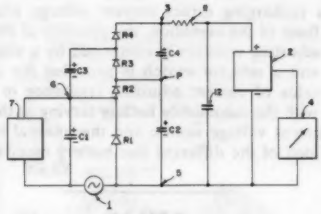
PROCESS AND APPARATUS FOR PROVIDING IMAGE BRIGHTNESS OVER A WIDE RANGE OF DISCHARGE REPETITION RATES

Charles E. Miller, Acton, Mass., assignor to General Radio Company, Concord, Mass.

Filed Sept. 17, 1971, Ser. No. 181,547

Int. Cl. H02m *7/00*

U.S. Cl. 321—15 **3 Claims**



This disclosure deals with a novel voltage-multiplying power supply process ad apparatus particularly adapted, through the use of a reactive voltage drop within the supply circuit, to produce substantially constant power in repetitive discharges of stored energy, irrespective of the variation in repetition rate of the discharges, within wide limits.

3,735,239

LINE VOLTAGE REGULATOR UTILIZING LINE VOLTAGE RESPONSIVE TIMING CIRCUIT TO MODULATE DUTY CYCLE OF CONTROLLABLE RECTIFIER

Joseph La Duca, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

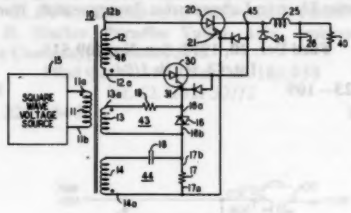
Filed Nov. 24, 1971, Ser. No. 201,636

Int. Cl. H02m *7/22*

U.S. Cl. 321—16 **5 Claims**

An AC to DC converter regulates its output voltage with respect to line voltage changes by utilizing a line voltage

responsive gating signal to control silicon controlled rectifiers in the output rectifier. The gating signals are generated by off-



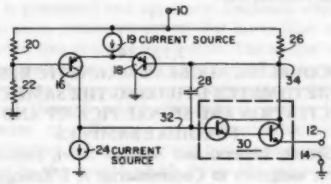
setting a voltage generated by a line voltage responsive timing circuit against a reference voltage.

3,735,240

INTEGRATED CIRCUIT CURRENT REGULATOR WITH DIFFERENTIAL AMPLIFIER CONTROL

William F. Davis, Tempe; Ronald W. Russell, Scottsdale, both of Ariz.; Thomas M. Frederiksen, and Ernest L. Long, both of San Jose, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 15, 1971, Ser. No. 189,521
Int. Cl. G05f 1/56
U.S. Cl. 323—4 **10 Claims**



A current regulator for an automotive fuel injection system includes an integrated circuit chip having a differential amplifier with a control point to be coupled through an external impedance to the power supply. The differential amplifier drives a pair of Darlington connected transistors to control the current from the power supply to the load, which flows through the impedance. The collector electrodes of the Darlington transistors are connected to the control point, which is coupled to an input of the differential amplifier to form a closed negative feedback loop.

The transistors of the differential amplifier may have dual collector electrodes, and first and second Darlington pairs coupled thereto can control the current supplied to first and second loads. Switches are connected to the Darlington inputs for selectively enabling one output or the other.

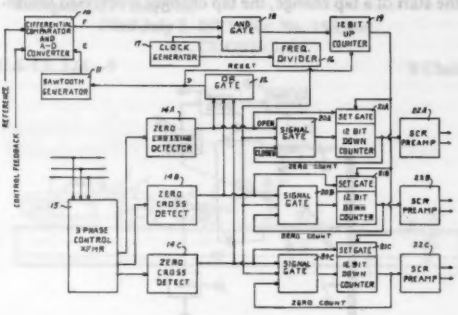
3,735,241

POLY-PHASE DIGITAL CONTROLLER

George O'Sullivan, Pottersville, N.J., assignor to Tenney Engineering, Inc., Union, N.J.

Filed Dec. 28, 1971, Ser. No. 213,027
Int. Cl. G05f 1/44
U.S. Cl. 323—22 SC **4 Claims**

A polyphase digital controller comprised of circuitry to generate and count a group of digital clock pulses with the first pulse being counted after the zero crossing of the primary voltage. The number of pulses in the group is proportional to the control function representing (SCR) silicon controlled rectifiers off time. These clock pulses are counted by an up counter which is used to set an individual down counter in each phase. The up counter operates six times during each 360° of the input line. This setting of the down counters occurs when the primary voltage associated with the individual phase of each counter crosses zero. This zero crossing also starts the down counter associated with that phase, counting a clock



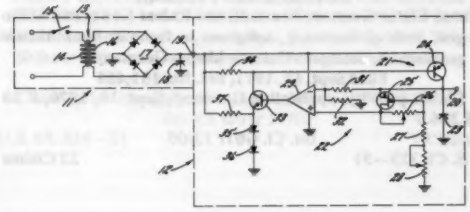
frequency that is one-third the frequency of the up counter clock. When the down counter reaches zero it supplies a signal to fire the SCR controlling that phase.

3,735,242

SERIES VOLTAGE REGULATOR WHEREIN AN FET SUPPLIES A CONSTANT CURRENT REFERENCE VOLTAGE TO A DIFFERENTIAL COMPARATOR

Marinus Leland Andersen, Nevada, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed Oct. 29, 1971, Ser. No. 193,933
Int. Cl. G05f 1/56, 1/64
U.S. Cl. 323—22 T **7 Claims**



A series-type dc. voltage regulator includes an operational amplifier as a very sensitive differential comparator for comparing the regulated output voltage against a very stable reference so as to provide an error signal for correctively adjusting the collector-emitter impedance of a series regulating transistor in response to even very small deviations of the output voltage from its set point. The reference voltage is developed internally by using a field effect transistor, biased to operate in a temperature stabilized constant current mode, to drive current through a voltage dropping resistance. The operational amplifier is powered by the dc. source with which the voltage regulator is employed and has an output offset to foreshorten the rise time of the regulated output voltage.

3,735,243

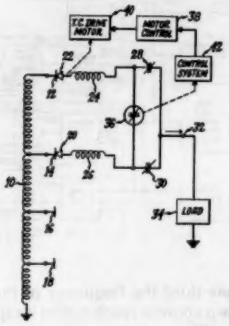
CONTROL SYSTEM FOR TAP CHANGER WITH VACUUM INTERRUPTER

Clifford L. Downs, Lenox, and Richard D. Blackburn, Dalton, both of Mass., assignors to General Electric Company

Filed Apr. 3, 1972, Ser. No. 240,573
Int. Cl. G05f 1/14
U.S. Cl. 323—43.5 R **6 Claims**

A control system for a tap changer using a vacuum interrupter. The control system has provisions for monitoring the vacuum interrupter to detect any failure of such interrupter

and thus prevent further operation of the tap changer. Should the interrupter fail to open on a tap change, the tap changer motor is reversed returning the changer to the starting position and locking the changer. Should the interrupter be open at the start of a tap change, the tap changer is reversed returning the tap changer to the starting position and then locking the tap changer. In another embodiment, should the interrupter fail to close after a tap change has been initiated, the tap change is completed and the changer locked in that position.



3,735,244

DISPLACEMENT PICK-UP

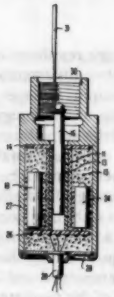
Hanns Dieter Gumtau, Neustadt, and Rainer Kowarsch, Aldingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 17, 1971, Ser. No. 181,464

Claims priority, application Germany, Sept. 19, 1970, P 20 46 336.9

Int. Cl. G01r *33/00*

U.S. Cl. 323—51 **22 Claims**



An electronic motion pick-up in which a core made of ferromagnetic material and displaceable in accordance with the motion to be measured, is adapted to be immersed into a coil forming part of a tuned circuit of a transistorized oscillator whose rectified output voltage is used as electrical measuring magnitude; the permeability of the core is thereby limited to such a value that the oscillations are not stopped also with the deepest immersion of the coil into the core which is possible during the operation.

3,735,245

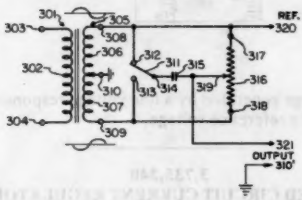
PHASE SHIFTER CIRCUIT

Albert Charles Stigvils, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 20, 1971, Ser. No. 209,516

Int. Cl. H03b *3/04*

U.S. Cl. 323—109 **1 Claim**



A phase shift circuit capable of shifting the phase of an input signal over a 360° range. It consists of a center tapped feed transformer with its outer terminals connected across the outer terminals of a potentiometer. The movable arm of the potentiometer is connected through a capacitor to one or the other of the outer terminals of the transformer, with the phase shifted output taken from the potentiometer arm and a center tap of the transformer.

3,735,246

SPIN-COUPLING NUCLEAR MAGNETIC RESONANCE MAGNETOMETER UTILIZING THE SAME COIL FOR EXCITATION AND SIGNAL PICK-UP AND USING TOROIDAL SAMPLES

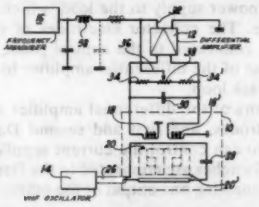
Henri Glenat, Biviers, and Antoine Salvi, Fontaine, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed July 7, 1971, Ser. No. 160,277

Claims priority, application France, July 22, 1970, 7027009

Int. Cl. G01r *33/08*

U.S. Cl. 324—0.5 R **11 Claims**



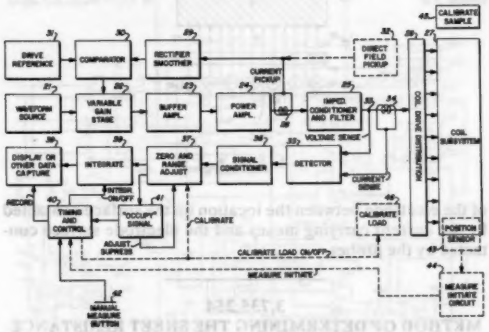
The magnetometer comprises two samples which are subjected to the field to be measured and contain the same atomic nuclei having a non-zero magnetic moment and kinetic moment ; two aligned coils each associated with a sample ; means for producing an electromagnetic field at the electron resonance frequency in order to saturate one line of one of the samples which increases energy absorption at the resonant frequency of the atomic nuclei and one line of the other sample so as to produce an energy emission at said resonant frequency ; a differential amplifier associated with two coils, each half-coil being connected to a fixed reference voltage and to a respective input of the amplifier, and means for measuring the frequency at the output of the amplifier.

3,735,247

METHOD AND APPARATUS FOR MEASURING FAT CONTENT IN ANIMAL TISSUE EITHER IN VIVO OR IN SLAUGHTERED AND PREPARED FORM

Wesley H. Harker, Paradise Valley, Ariz., assignor to The Emme Company, Glendale, Ariz.

Filed Oct. 4, 1971, Ser. No. 186,058
Int. Cl. G01r 33/12
U.S. Cl. 324—34 R 11 Claims



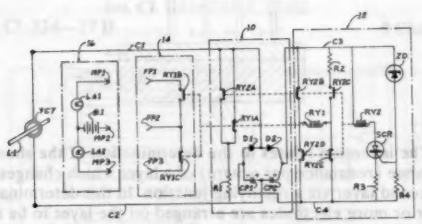
A method is presented and apparatus disclosed which permits very accurate measurement of the fat-to-lean ratio of meat, whether in vivo or in prepared form. The animal or meat package to be analyzed is subjected to a varying electromagnetic field generated by applying a radio frequency signal to a solenoidal coil through which the sample passes longitudinally. Because of difference of electroconductivity and dielectric properties between various body components, the load observed by the source which drives the solenoidal coil takes on a different value from that of the empty sample zone. By utilizing other predetermined parameters of the sample, the load difference may be utilized to infer the fat-to-lean ratio to a commercially acceptable standard.

3,735,248

APPARATUS HAVING AUTOMATIC RE-SET MEANS FOR DETECTING A FAULT CURRENT

Robert L. Reese, 1009 Bryan Drive, South Euclid, Ohio

Filed Mar. 31, 1970, Ser. No. 24,302
Int. Cl. G01r 31/02, 31/08
U.S. Cl. 324—51 3 Claims



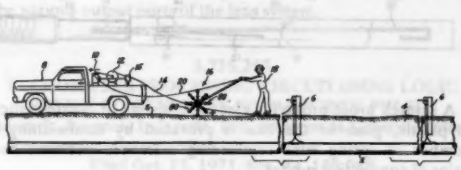
A device for detecting fault current. The device senses the current in a line and converts it to a proportional voltage signal. The voltage signal is used to switch a solenoid to first and second positions depending upon the value of the signal. The device will re-set itself after sensing a fault current when normal line current is restored.

3,735,249

SPOKED ELECTRODE FOR MONITORING EARTH CURRENTS

Donald F. Stoll, Vernal, Utah, assignor to El Paso Natural Gas Company, El Paso, Tex.

Filed July 1, 1971, Ser. No. 158,869
Int. Cl. G01v 3/08
U.S. Cl. 324—9 8 Claims



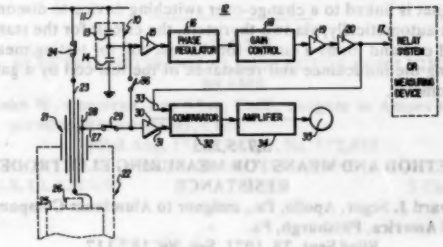
A monitoring device for use in measuring earth potentials, including a hub carried by a handle unit and having a plurality of spokes extending therefrom. Each spoke has an electrolytic solution cell on its outer end, into which a spoke-mounted electrode extends. The outer end of the cell has a porous tip mounted thereon, which is wetted by the solution and engages the earth. The spokes and the hub are made of conductive material, and a brush-type electrical pickup on the handle unit engages the hub for transmitting signals detected by the wetted porous tips as they progressively engage the earth when the device is rolled along.

3,735,250

FAULT DETECTING APPARATUS FOR A CAPACITOR TYPE POTENTIAL DIVIDER HAVING AN AMPLIFIER

Michio Masui, Kitatama-gun, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed July 1, 1971, Ser. No. 158,832
Claims priority, application Japan, July 8, 1970, 45/59212
Int. Cl. G01r 31/02
U.S. Cl. 324—51 7 Claims



A capacitor type potential divider having an amplifier is provided with a pair of capacitor units respectively connected to the same phase line of A.C. polyphase power lines. A divided voltage derived from one of the capacitor units is applied through an amplifier to a protecting relay system and/or a voltage measuring device for the polyphase power lines. The output of the amplifier and the divided voltage derived from the other capacitor unit are applied to a comparator for enabling a difference voltage therebetween to be obtained. The difference voltage is then employed to energize a fault detection relay for enabling a fault in the capacitor type potential divider to be detected.

3,735,251

SCRATCH PROOF PROBE FOR MANUAL TESTING OF ELECTRICALLY INSULATING COATINGS

Orson J. Britton, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Sept. 23, 1971, Ser. No. 182,947
Int. Cl. G01r 31/12, 1/06
U.S. Cl. 324—54 2 Claims

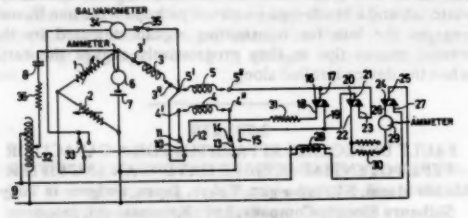
A scratch proof probe for electrical testing of coatings such as plastic, glass or the like is provided by sandwiching a number of spring wire reinforcing members between two strips of conductive rubber.

3,735,252

AUTOMATIC TESTER FOR TESTING RESISTANCE AND INDUCTANCE OF COIL WINDINGS

Koichi Azuma, 22 Miyuki, Shikamaku, Himeji, Japan

Filed July 2, 1971, Ser. No. 159,260
Int. Cl. G01r 11/52
U.S. Cl. 324—59 1 Claim



A coil winding tester has a bridge circuit with two variable resistors connected to the two adjoining sides and two standard coil windings connected to the other two sides. A a power source, it further has D.C. and A.C. connected in parallel to the bridge circuit. A coil winding to be tested, when connected to this invention's circuit, causes a control signal to set one of the thyristors to work an electric magnet, connected to the A.C. power source, via another thyristor. This electric magnet is linked to a change-over switching device to disconnect automatically, via two thyristers, the circuit for the standard coil and forms a circuit for the test coil for testing/measuring the inductance and resistance of the test coil by a galvanometer.

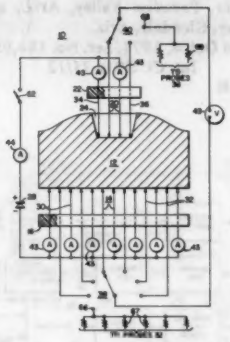
3,735,253

METHOD AND MEANS FOR MEASURING ELECTRODE RESISTANCE

Edward J. Seger, Apollo, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 23, 1971, Ser. No. 183,117
Int. Cl. G01r 27/14
U.S. Cl. 324—64 6 Claims

A method and apparatus for measuring the electrical resistance of a carbonaceous electrode. The apparatus includes a plurality of current carrying and voltage measuring probes for electrically contacting a surface of the electrode over a broad area. A second current carrying means is placed in electrical contact with the electrode at a location spaced from the surface contacted by the probes, and a voltage source is connected between the second current carrying means and the probes to apply a potential across the electrode and thereby direct current through the electrode. Current flows through the electrode along a plurality of paths between the current carrying means and the plurality of probes. The amount of current flow in each path, and the voltage drop across the electrode are measured to determine the electrical resistance



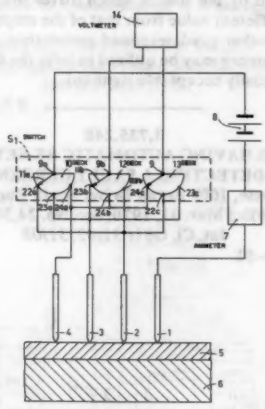
of the electrode between the location on the surface contacted by the current carrying means and the electrode surface contacted by the probes.

3,735,254

METHOD OF DETERMINING THE SHEET RESISTANCE AND MEASURING DEVICE THEREFOR

Petrus Johannes Wilhelmus Severin, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 3, 1971, Ser. No. 149,533
Claims priority, application Netherlands, June 6, 1970, 7008274
Int. Cl. G01r 27/14
U.S. Cl. 324—64 12 Claims



The invention relates to the determination of the sheet resistance (resistance per square) of a layer which changes into a second layer via a rectifying junction. In this determination, four or more electrodes are arranged on the layer to be measured, for example on a straight line. In a first step, a current is conveyed through two electrodes at a comparatively low voltage and the voltage associated with said current is determined between two other electrodes as is usual in a normal four point measurement. In a second step of the measurement the same measurement is carried out without changing the place of the electrodes but while changing a current supply and a voltage take-off electrode, with the difference that at least electrodes for current supply or voltage measurement have a different distance as compared with that of the first measurement. The

sheet resistance or a quantity associated therewith is obtained in an accurate manner from the results.

3,735,255

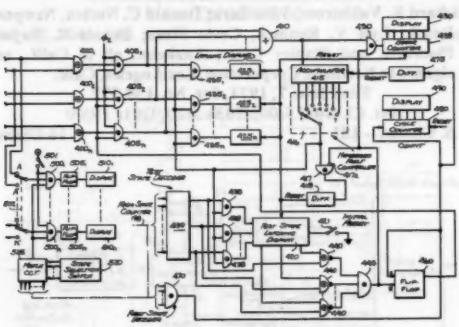
APPARATUS AND METHOD FOR TESTING A MULTI-TERMINAL LOGIC CIRCUIT CAPABLE OF DETECTING FIXED AND INTERMITTANT FAULTS

Alvin Goldman, 190 East 72nd Street, New York, N.Y.

Continuation-in-part of Ser. No. 816,244, April 15, 1969, abandoned. This application Aug. 6, 1971, Ser. No. 169,620

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **8 Claims**



A programmed test arrangement for electronic assemblies compares the output of an array (generally of integrated circuits) to be tested against either the output from another similar array or a model output. Circulating shift registers containing the test data provide a sequence of two state test signals. These test signals together with various unchanging signals are connected as inputs to the arrays. The registers are loaded in accordance with a program that is a function of the circuit being tested.

Fixed and intermittent faults on the electrical arrangement under test are identified by particular patterns of fault indications generated responsive to the two state logic output signals. The test data cycled through the circulating registers is a function of the type of array to be tested. The fault indicated is a function of the error in the particular array being tested.

3,735,256

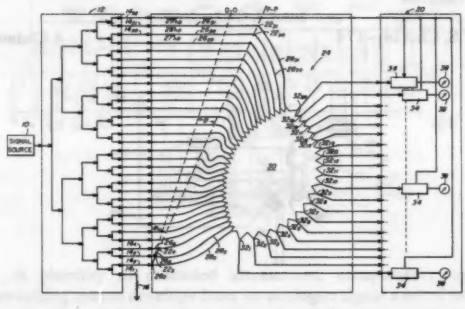
SIGNAL SPECTRUM ANALYZER

Donald H. Archer, and Robert J. Prickett, both of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 26, 1971, Ser. No. 175,302

Int. Cl. G01r *23/16, 27/02*

U.S. Cl. 324—77 D **9 Claims**



A radio frequency signal spectrum analyzer, suitable for fabrication on a single substrate and adapted to provide a substantially instantaneous indication of the frequency of a signal is disclosed. The spectrum analyzer includes a two dimensional constrained electromagnetic lens system having each one of its input ports coupled to the signal source through an electrical path of different predetermined electrical lengths. The energy of the signal passes through each one of the electrical paths to each one of the input ports and then is focused by the lens system to particular output ports of such antenna in accordance with the frequency of the signal. The frequency of the signal is determined by measuring the energy level in the various output ports of the lens system.

3,735,257

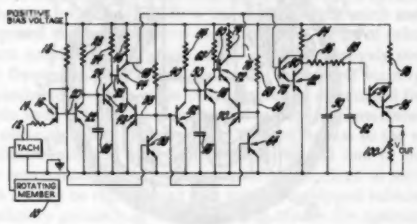
TACHOMETER PROCESSING CIRCUIT USING LOGIC DEVICE TO GENERATE EQUAL WIDTH PULSES

Bruce B. Roesner, Lafayette, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1971, Ser. No. 188,088

Int. Cl. G01r *23/02*; **H03k** *5/20*

U.S. Cl. 324—78 E **4 Claims**



A voltage level analog of the frequency of a rotating member is developed by a tachometer processing circuit using a NAND logic device. A first pulse train related in frequency with the frequency of the rotating member is applied to an RC timing circuit to control a transistor switching device to develop a second pulse train at the transistor output at the same frequency as the first pulse train, but having pulse widths differing by a fixed predetermined amount of dwell. The second pulse train and an inverted version of the first pulse train are applied to a NAND logic device to develop a pulse train having pulses with widths equal to the dwell by which pulses in the second train exceed pulses in the first train. The pulses developed by the NAND logic device are averaged by an RC filter to provide a DC analog of frequency.

3,735,258

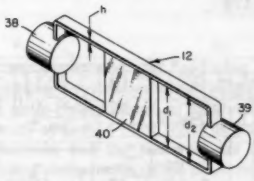
ELECTRO-MECHANICAL DEFLECTOR FOR LIGHT BEAMS

John W. Corcoran, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 17, 1971, Ser. No. 172,483

Int. Cl. G01r *13/38, 1/00*

U.S. Cl. 324—97 **5 Claims**



A specific galvanometer structure, designed to maximize the coil/mirror inertia torsional resonance and the inductance/inertia resonance, includes a galvanometer coil and a mirror integrally bonded therewith. The coil itself acts as the mechanical beam for the mirror, and is made of many layers of

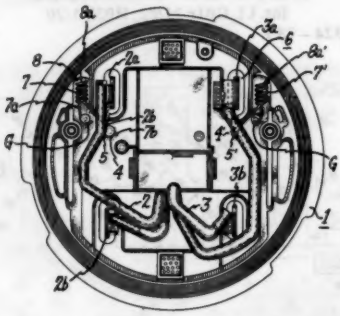
anodized aluminum ribbon bonded together with epoxy. Increasing the cross-sectional width of the coil raises the coil/mirror inertia torsional resonance but lowers the inductance/inertia resonance. Accordingly, optimized operating frequency occurs when the two resonant frequencies are equal. A drive circuit coupled to the coil via a flexure-pivot coil suspending means, produces a current pulse doublet of the same form as the acceleration desired at the mirror.

3,735,259

OVERVOLTAGE SURGE ARRESTER FOR A METER

Ansell W. Palmer, Hampton, N.H., assignor to General Electric Company

Filed Oct. 14, 1971, Ser. No. 189,458
Int. Cl. G01r 1/00; H01j 17/20
U.S. Cl. 324—110 **4 Claims**



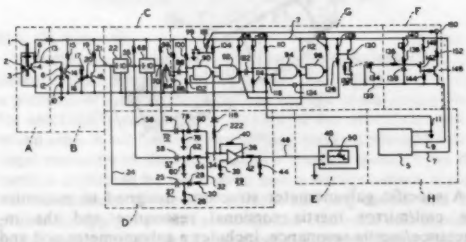
An insulating base plate for a meter, such as a watt-hour meter, is provided with an integral housing for a helically coiled electrical resistance wire that forms part of a current limiting sparkgap assembly which is enclosed completely within the meter base plate and its associated meter cover. The housing arrangement for the helical resistance wire is characterized by embodying spacing means for maintaining the individual coils of the helix separated from one another when they are subjected to magnetic forces due to the discharge of an overvoltage surge through the sparkgap assembly. A further characteristic feature of the sparkgap assembly is the provision of a novel means for accurately and inexpensively mounting the respective electrodes of the sparkgap in a predetermined relationship with respect to one another.

3,735,260

PULSE COUNTING LINEAR MEASURING DEVICE

Rolland L. Hartline, Buchanan, and Charles E. Kramer, Three Oaks, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 11, 1971, Ser. No. 170,879
Int. Cl. G01p 3/66
U.S. Cl. 324—175 **6 Claims**



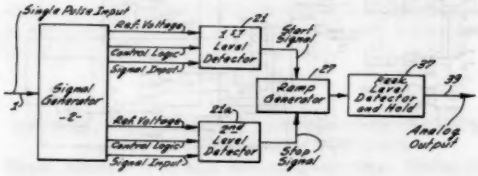
This is a pulse counting linear measuring and recording device utilizing a "fifth wheel" associated with a photocell to produce an electrical pulse each 0.1 foot of linear travel. The electrical pulses are counted and a larger pulse produced for each 1 foot of travel and a still larger pulse produced for each 10 feet of travel. These pulses are then presented vertically on a chart moving at a horizontal uniform rate. Provision is made for time interval presentation on the chart. The time interval may be automatically set at 6.82 seconds so that the counting of the 10 foot pulses gives equivalent miles per hour speed. The time interval also may be mechanically set at a desired starting event and ending event for a particular cycle.

3,735,261

PULSE ANALYZER

Richard E. Vahlstrom, Villa Park; Donald C. Nutten, Newport Beach; Lyle V. Rennick, Costa Mesa; Dennis R. Bayne, Placentia, and Stanley Oster, Anaheim, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed June 7, 1971, Ser. No. 150,377
Int. Cl. G04f 9/00; H03k 5/20; G01r 19/00
U.S. Cl. 324—181 **16 Claims**



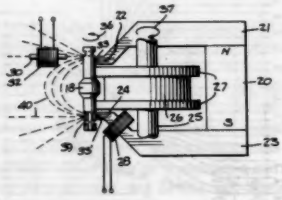
Rise time, fall time, and width of a single short duration pulse are measured with no a priori knowledge of the pulse. First and second level detectors are used to respectively start and stop a ramp generator. The level detectors are biased to fire at certain defined percentages of the leading and/or trailing edge of the pulse depending upon which time parameter the detectors are measuring. A peak level detector and hold circuit connected to the ramp generator output gives a voltage amplitude proportional to the "on" time of the generator and thus indicative of the time interval being measured. To supply the level detectors with the proper information, an input and logic section produces from the incoming (positive) pulse its peak amplitude, negative peak amplitude, a delayed positive pulse, a delayed negative pulse, and timing signals for enabling and disabling the level detectors as necessary.

3,735,262

APPARATUS FOR MEASURING REVOLUTION SPEED OF A BODY

Peter Orth, Mercklinghausstr. 54, D-478 Lippstadt, Germany

Continuation of Ser. No. 872,491, Oct. 30, 1969, Pat. No. 3,665,306. This application Nov. 5, 1971, Ser. No. 196,079
Claims priority, application Switzerland, Nov. 18, 1968, 17200/68
Int. Cl. G01p 3/48
U.S. Cl. 324—174 **6 Claims**



Apparatus for the electromagnetic measurement of the speed of revolution of a twist tube of a false twisting device, the twist tube being fabricated from magnetically susceptible

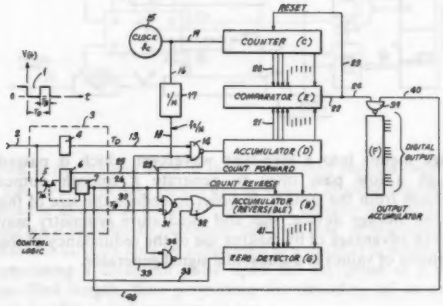
material and having an opening extending transversely of the axis thereof, the twist tube being mounted between opposite poles of a magnet so that a magnetic field extends substantially perpendicularly across the axis of the shaft, a coil mounted in the range of influence of the magnetic field for sensing the field variations induced by the periodical variations of the magnetic resistence of the rotating shaft.

3,735,263

DIGITAL ANALYSIS OF ELECTRIC WAVE SIGNALS

John T. Boatwright, Hopkinton, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed July 12, 1972, Ser. No. 271,077
Int. Cl. G04f 9/00
U.S. Cl. 324—186 **4 Claims**



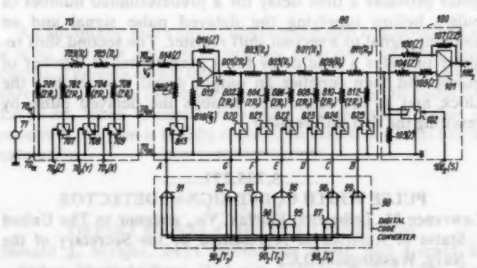
Digitally measuring the duty cycle of a repetitive signal having a fractional active portion by producing and accumulating a summation of a first series of pulses of total duration equal to the period of the signal, producing and accumulating a summation of a second series of pulses of total duration equal to the active portion of the signal, reversibly counting back to zero over an interval equal to the duration of the fractional period and counting the number of pulses of the first series during the interval.

3,735,264

COMPANDING PULSE CODE MODULATION SYSTEM

Robert R. Mauduech, 7, rue du Docteur Roux, Perros-Guirec, France

Filed Sept. 8, 1969, Ser. No. 855,881
Claims priority, application France, Sept. 11, 1968, 68165786
Int. Cl. H03k 13/00
U.S. Cl. 325—38 **1 Claim**



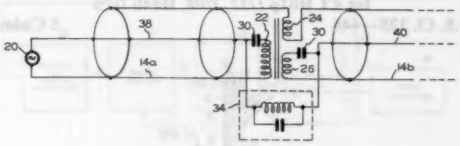
A plurality of cascaded attenuators, comparators, and switching means develops from an analogue signal a set of successive "one" digits and an adjacent set of successive "zero" digits. These digits correlate with the P.M.C. code as determined by a computer.

3,735,265

RADIO COMMUNICATION/CONTROL SYSTEM FOR RESTRICTED RANGE SIGNALING NEAR THE EARTH'S SURFACE

James J. Karaganis, Rockville, Md., assignor to Peter V. Gureckis, Potomac, Md.

Filed Nov. 24, 1970, Ser. No. 92,389
Int. Cl. H04h 1/00
U.S. Cl. 325—28 **8 Claims**



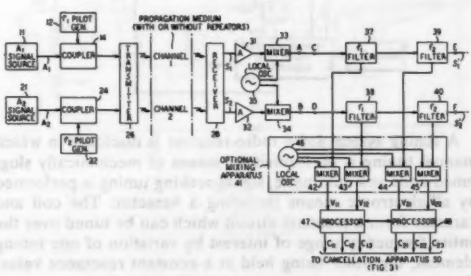
A communications and control system for providing radio signaling between one or more fixed terminals, transmitting and/or receiving radio frequency signals through a system of conductors located at or below the surface of the earth and so juxtaposed mechanically and electrically (in terms of relative current amplitude and phase) as to provide relatively strong radio frequency field intensities in the immediate vicinity of the conductor system, while creating greatly attenuated fields outside said vicinity for purposes of minimizing interference with other signaling systems or for denying access to the subject communication and control network, and one or more other transmitting and/or receiving terminals, fixed or mobile (such as may be represented by a suitably equipped vehicle or ambulatory person), as well as certain means for optimizing the distribution of the radio frequency field within the useful range of the system.

3,735,266

METHOD AND APPARATUS FOR REDUCING CROSSTALK ON CROSS-POLARIZED COMMUNICATION LINKS

Noach Amitay, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,652
Int. Cl. H04b 1/00
U.S. Cl. 325—60 **6 Claims**



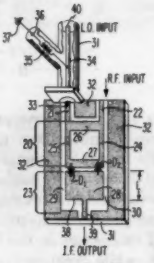
A method and apparatus for reducing crosstalk in microwave transmission systems in which information is transmitted in two cross-polarizations or channels. Utilizing a frequency-diversity system, a pilot signal is transmitted with each of the channels; and the receivers are equipped with means for detecting components of the pilots received in each channel to indicate the level of crosstalk. The components of the pilots are processed at the receiver in a predetermined manner to generate control signals proportional to the degree of correction required to cancel the crosstalk. The cancellation is accomplished by RF or IF control circuits in either feedback or feed-forward arrangements which, in response to the control signals, operate directly upon the received signals

to cancel the crosstalk automatically. The technique is theoretically adaptable to any number of distinct linear polarizations or channels and is particularly suited for use in satellite communication links.

3,735,267
BALANCED MIXER

Louis Sebastian Napoli, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 23, 1971, Ser. No. 165,490
Int. Cl. H01p *1/32, 3/08;* **H04b** *1/26*
U.S. Cl. 325—446 **5 Claims**

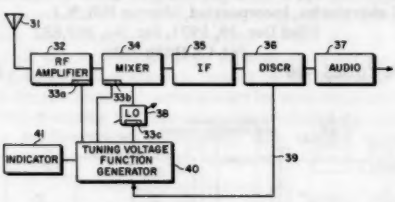


Coplanar and slot transmission lines are used to provide an improved microwave balanced mixer.

3,735,268
DUPLEX TUNING FOR RADIO RECEIVERS

Charles M. Dorsey; Harold J. Laurent; Michael Slavin, all of Baltimore, and Reuben Laverne Stauffer, Timonium, all of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 15, 1970, Ser. No. 72,470
Int. Cl. H04b *1/34*
U.S. Cl. 325—464 **9 Claims**



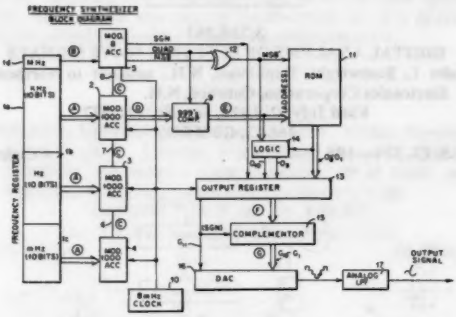
A tuning system for a radio receiver is disclosed in which manual tuning is performed by means of mechanically slug-tuned coils and automatic, signal-seeking tuning is performed by all-electronic means including a varactor. The coil and varactor form a resonant circuit which can be tuned over the entire frequency range of interest by variation of one tuning element, the other being held at a constant reactance value. For manual tuning, the varactor is held at a constant reactance value while the coil is tuned. For automatic tuning, the varactor is tuned and the coil is held fixed. A zone type electronic display is disclosed for use with the automatic tuning function.

3,735,269
DIGITAL FREQUENCY SYNTHESIZER

Leland B. Jackson, Monsey, N.Y., assignor to Rockland Systems Corporation, West Nyack, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,826
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **40 Claims**

A digital frequency synthesizer using modulo 10^N accumulator means for receiving signals corresponding to a predetermined frequency output and for successively generating signals corresponding to addresses in a storage means, each of the addresses corresponding to a storage location which stores digital values corresponding to at least the magnitude of a plurality of digital samples of the output signal from the synthesizer. A digital-to-analog converter converts the output of the

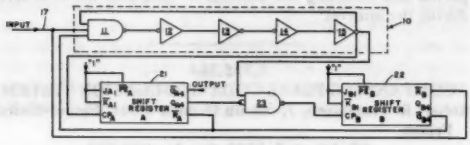


storage means into a step-type waveform which is passed through a low pass filter to generate a smooth output waveform from the system. In order to reduce the size of the required storage device, sign and quadrature symmetry may be taken advantage of by making use of the redundancy of the magnitude of values in a sinusoidal signal generator.

3,735,270
DELAYED PULSE GENERATOR

George J. Holub, Dix Hills, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1972, Ser. No. 236,016
Int. Cl. H03k *5/153*
U.S. Cl. 328—55 **8 Claims**



A delayed pulse signal of a predetermined pulse width is obtained by having a free running clocking pulse generator provide a series of pulses to a first shift register. The first shift register provides a time delay for a predetermined number of pulses before supplying the delayed pulse signal and an enabling signal to a second shift register. The second shift register provides a time delay for a predetermined number of pulses and then supplies an output signal that inhibits the clock and at the same time inhibits the delayed pulse by resetting the first shift register.

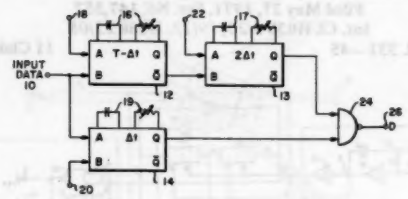
3,735,271
PULSE WIDTH CODED SIGNAL DETECTOR

Lawrence M. Leibowitz, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1971, Ser. No. 191,698
Int. Cl. H03k *5/18*
U.S. Cl. 328—112 **3 Claims**

Two one-shot circuits are triggered by an input data pulse to be interrogated. At the leading edge of the input pulse, one of the two one-shot circuits generates a pulse of the specified width minus the specified tolerance. The other one-shot cir-

cuit generates a pulse width equal to the specified tolerance at the trailing edge of the interrogated pulse. The output of the first one-shot circuit triggers a third one-shot circuit which in turn generates a pulse of a width equal to twice the specified tolerance. The outputs of the second and third one-shot circuits are combined in a NAND gate which generates the detection pulse to indicate that the interrogated pulse is within the specified tolerance. The detection pulse is generated as



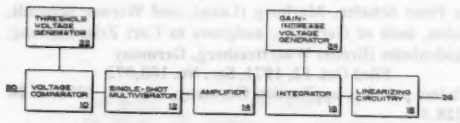
soon as the trailing edge of the interrogated pulse is received. Thus, two input data pulses can be placed as close together as possible as long as the individual pulse identity is maintained, making it possible to maximize the date rate. A multiplicty of detector circuits may be connected in a parallel manner, each generating a detection pulse upon the reception of a pulse specified length, thus permitting the decoding of an entire pulse-width-coded message.

3,735,272

AUTOMATIC GAIN CONTROL

Rueben E. Nyswander, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 20, 1971, Ser. No. 191,047
Int. Cl. H03g *3/20*
U.S. Cl. 328—132 **5 Claims**



An automatic gain control wherein the gain is maintained at a level just low enough to prevent saturation by noise and clutter. The gain slowly increases at a highly linear rate until a threshold value is exceeded; then the gain is rapidly reduced. Likewise, when a signal exceeding the threshold value is received, the gain is rapidly reduced to maintain a level below saturation.

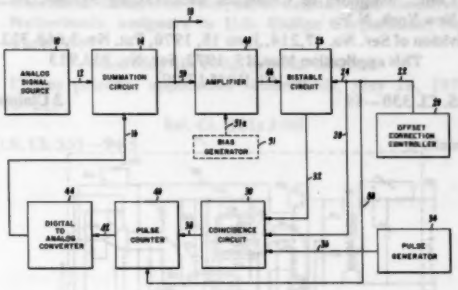
3,735,273

OFFSET SIGNAL CORRECTION SYSTEM

Donald J. Wright, 2411 Northfields Road, and Gerald E. Fisher, Sheffield Road, W. Leigh, both of Charlottesville, Va.

Filed Apr. 6, 1972, Ser. No. 241,557
Int. Cl. H03k *5/18*
U.S. Cl. 328—163 **6 Claims**

A system for correcting offset in analog signal generator output is responsive to simple pulse signal request for correction. A bistable circuit is set upon receiving the correction request and thereupon enables a coincidence circuit to gate pulses to a counter. The counter output is converted by a



digital-to-analog converter whose output signal is combined subtractively with the offset signal. Upon nulling of the offset signal the bistable circuit is reset.

ERRATUM

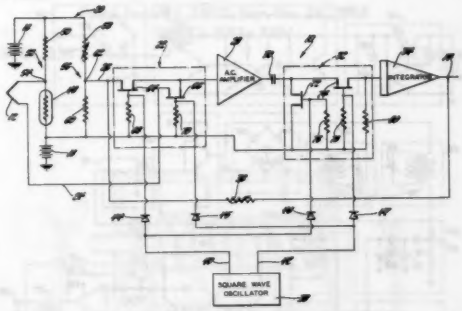
For Class 328—134 see:
Patent No. 3,735,218

3,735,274

THERMOCOUPLE SIGNAL AMPLIFIER

Robert E. Nelson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1971, Ser. No. 170,562
Int. Cl. H03f *1/02*
U.S. Cl. 330—1 A **2 Claims**



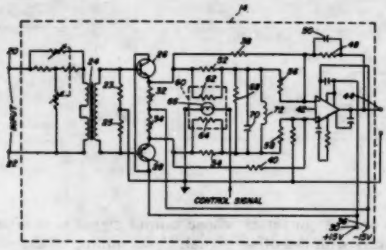
Apparatus for generating an amplified DC voltage signal that is (a) proportional to a DC voltage generated by a thermocouple, (b) of an amplitude determined by a feedback impedance, and (c) substantially independent of instrumentation drift. A temperature compensating and summation network generates a control signal. A modulator alternately applies the control signal and a reference signal to an AC amplifier. A demodulator intermittently applies the AC component of the amplified signal to an integrator. An oscillator controls the modulator and demodulator so the integrator output signal is a DC signal proportional to the thermocouple voltage, the DC signal being returned through the feedback impedance to control system gain.

3,735,275

DYNAMIC PRESENCE FILTER

Richard G. Allen, Pound Ridge, N.Y., and Emil Torick, Darien, Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Division of Ser. No. 47,214, June 18, 1970, Pat. No. 3,668,322.
This application Mar. 15, 1972, Ser. No. 234,913
Int. Cl. H03f 17/00
U.S. Cl. 330—59 3 Claims



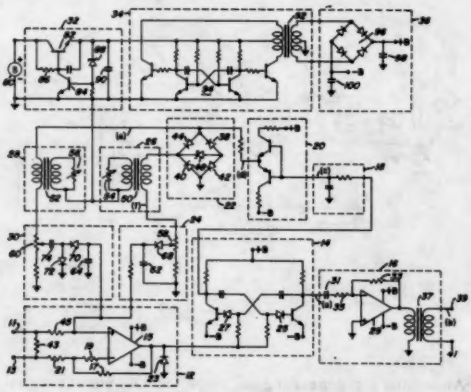
A speech processing device operative to correct deficiencies in speech programs caused by inadequate energy in the "presence band". The device determines the relative amount of total signal energy in the presence band, and, if it is inadequate, automatically boosts the amplitude of presence band components to a level to obtain a more optimum spectral distribution. The circuit is designed to operate with an automatic speech-music discriminator which inhibits control action during music programming.

3,735,276

OSCILLATOR SYSTEM

Richard Apolant, Irondequoit, N.Y., assignor to S.C.J. Associates Inc., Rochester, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,318
Int. Cl. H03b 3/02
U.S. Cl. 331—11 10 Claims



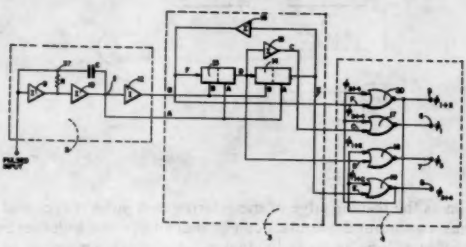
A current controlled oscillator system is described which is isolated electrically from external systems and sources. The system includes a voltage controlled oscillator to which a control voltage related to the input control current is supplied for varying its frequency. A pair of alternating current channels respond to the oscillator signals and produce control signals which preset the frequency limits over which the oscillator frequency may be varied and to control the oscillator frequency so as to vary linearly with the input control current within such limits. The channels separately have a peak detector and a discriminator which develop control signals of opposite polarity from limited oscillator output signals. Isolation is provided both from control devices and from external power supplies by coupling these devices and power supplies to the system through transformers; the external power supply being coupled through a transformer which is part of a DC to AC inverter connected to the external supply.

3,735,277

MULTIPLE PHASE CLOCK GENERATOR CIRCUIT

Frank M. Wanlass, Cupertino, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed May 27, 1971, Ser. No. 147,557
Int. Cl. H03b 5/20, 19/12; H03k 23/08
U.S. Cl. 331—45 11 Claims



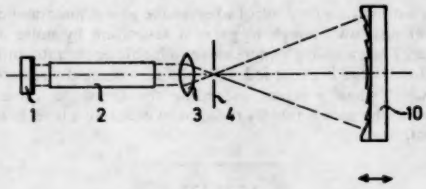
A clock signal generating circuit including an oscillator circuit for supplying complementary square wave gating signals to a multi-bit shift register. One shift register bit is required for each two clock pulse phases. Output signals from each bit position of the shift register are provided as input signals to NOR gates which also receive feedback input signals from the output terminals of certain of the NOR gates to synchronize the phase relationship between the multiple phase clock signals produced by the output logic gates. The output signals from the NOR gates comprise the multiple phase clock signals.

3,735,278

DEVICE FOR WAVELENGTH SELECTION IN LASERS WITH BROAD-BAND EMISSION

Fritz Peter Schafer, Marburg (Lahn), and Werner Schmidt, Aalen, both of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim (Brenz) Wuerttemberg, Germany

Filed Oct. 12, 1971, Ser. No. 188,073
Claims priority, application Germany, Oct. 20, 1970, P 20 51 328.4
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 5 Claims

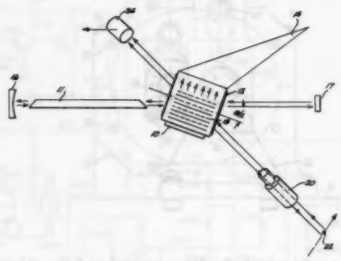


In a device for wavelength selection in dye lasers with a broad-band emission, and which comprises in axial alignment a light source, a laser cell, a directional filter including an apertured stop, the improvement comprises a focusing lens system having a wavelength-dependent focal length arranged behind said directional filter and which with the assistance of a mirror images said apertured stop in itself by reflection.

3,735,279
COLINEAR HETERODYNE FREQUENCY MODULATOR

Melvin E. Pedinoff, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 646,867, June 19, 1967, abandoned. This application Dec. 10, 1970, Ser. No. 97,003
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 6 Claims

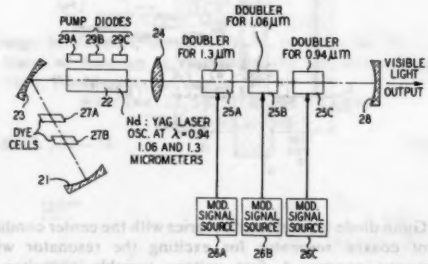


An apparatus to produce Brillouin scattering by means of two oppositely directed colinear optical beams, frequency-translated and of varying power level, in a time sequence suitable for processing doppler-shifted radar target echoes by means of a simplified optical heterodyne detection system.

3,735,280
WHITE-LIGHT LASER USING DYE COUPLING

Wilbur Dexter Johnston, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 11, 1971, Ser. No. 170,767
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 6 Claims

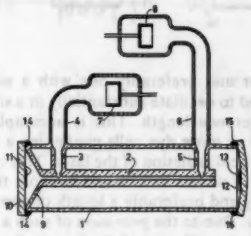


There are disclosed several arrangements for balanced three-color laser light sources. Also disclosed is a modulation arrangement which makes a three-color source readily adaptable for use in a color television receiver. The arrangements are based upon the use of a broadband gain medium, such as a dye laser medium, to modify the intensity relationship between two or more independent transitions or two or more competing transitions of a single laser medium. The same technique can be used with cascaded laser transitions.

3,735,281
GAS DISCHARGE LASER

Gijsbertus Bouhuis; Petrus Franciscus Antonius Haans, and Theodorus Hendrikus Peek, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1972, Ser. No. 254,886
Claims priority, application Netherlands, May 26, 1971, 7107210
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 5 Claims

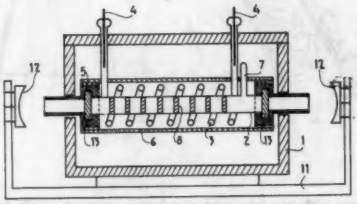


A laser having a wavelength of 6,328 A is constructed from a quartz capillary which is connected by side tubes to a supporting outer tube and electrode spaces. Double conical edges are ground on the outer tube, the line of intersection of which constitutes the support for the reflector plate. The laser is of the nearly hemispherical type and single mode.

3,735,282
LIQUID-COOLED, SEGMENTED GLASS LASER

Francois F. Gans, 38 rue Gustav Vatonne, Gif-sur-Yvette, France

Filed June 14, 1972, Ser. No. 262,600
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 3 Claims



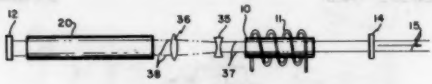
Laser device of the neodymium doped glass disc array type. The discs are spaced apart from one another and are immersed in a liquid whose refractive index is equal, for the emission wavelength of the laser, to the refractive index of the glass forming the discs. The disc inclination angle with respect to the disc alignment direction can take any desired value. To pump the discs in the whole volume thereof, the spacing is given a value higher than a predetermined minimal value and an inclination angle of 45° is selected. The immersion liquid is a mixture of a brominated saturated acyclic hydrocarbon and a saturated acyclic alcohol.

3,735,283

BEAM DIAMETER CONTROL FOR P LASER HAVING IMPROVED COHERENCE

Ralph Frederick Wuerker, and Lee Opert Heflinger, both of Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 23, 1971, Ser. No. 155,730
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 4 Claims



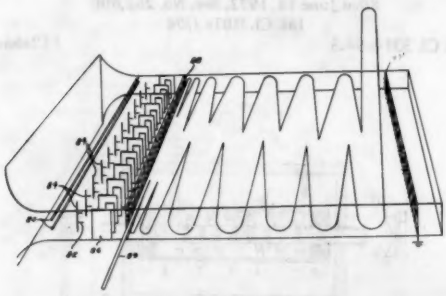
A pulsed laser and preferably one with a solid laserable material is caused to oscillate substantially in a single mode to increase its coherence length. This is accomplished by the provision of one or more dye cells containing a saturable absorber for the optical radiation of the laser. This combined dye cell has a length of no less than ¼ and no more than ⅜ that of the optical cavity and preferably a length of approximately ½ that of the cavity. Due to the provision of such a long dye cell the initial mode of oscillation of the laser is favored and the dye cell discriminates to a substantial extent against all other oscillating modes. Discrimination against unwanted modes is improved by controlling the size of the beam diameter passing through the dye cell. This permits independent control of the initial transmission of the dye cell by controlling the concentration of the dye, and the extent of bleaching during the pulse by controlling the beam diameter and hence light intensity within the cell.

3,735,284

AERODYNAMIC LARGE VOLUME GASEOUS ELECTRIC DISCHARGE SYSTEM

Alan E. Hill, Box 5444-A Rte. 5, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 7,935, Feb. 2, 1970. This application Mar. 29, 1971, Ser. No. 128,845
Int. Cl. H01s 3/22, 3/09
U.S. Cl. 331—94.5 15 Claims



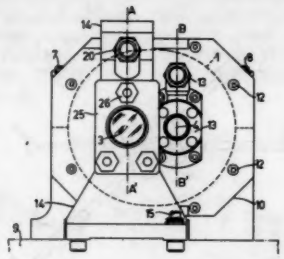
A large volume gaseous discharge system such as used in lasers has a plurality of electrodes at one end of the channel. A plurality of separate discharges are established adjacent the plurality of electrodes. A fast-moving gas stream within the channel aerodynamically controls the ion spacial distribution, and therefore indirectly the electron spacial distribution within the channel. In one system the geometry of the system and velocity of the stream are made such that the transit time between the plurality of electrodes at one end of the channel, and an electrode at the other end of the channel, is of the order of the diffusion time from one current stream and the next. In another embodiment rods are positioned to rapidly diffuse the plasma with nozzles provided to further aid in the mixing. A transverse folded optical path is used for laser operation.

3,735,285

SOLID-STATE LASER

Felix Romain Pawlak, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1972, Ser. No. 249,370
Claims priority, application France, Dec. 4, 1970, 7043668
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 3 Claims



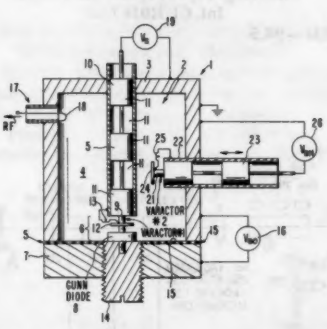
A crystal laser in which the laser crystal and the mirrors of the interferrometer are uncoupled mechanically from the pumping cavity. Due to this uncoupling, the stability of the laser is considerably improved. The construction of the pumping cavity is preferably such that part of it can be mounted or dismantled around the crystal without disturbing the critical adjustment of the mirrors and the crystal.

3,735,286

VARACTOR TUNED COAXIAL CAVITY NEGATIVE RESISTANCE DIODE OSCILLATOR

Arthur B. Vane, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed May 1, 1972, Ser. No. 249,063
Int. Cl. H03b 7/14
U.S. Cl. 331—101 8 Claims

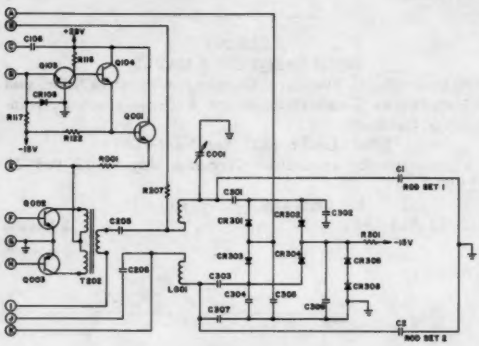


A Gunn diode is connected in series with the center conductor of coaxial resonator for exciting the resonator with microwave energy. A first voltage variable capacitor is disposed within the resonator in series with the Gunn diode for tuning thereof. The voltage variable capacitor is carried at the inner end of a choke structure disposed within the hollow interior of a conductive sleeve in DC insulated relation to the sleeve. An inductive wire is parallel resonated with the package capacitance of the series voltage variable capacitor and connects the inner terminal of the voltage variable capacitor to the sleeve of the choke for applying a variable bias voltage to the voltage variable capacitor for tuning the resonator. A similar second voltage variable capacitor and choked sleeve support is connectable for shunt tuning of the Gunn diode.

3,735,287
RF/DC GENERATOR FOR QUADRUPOLE MASS ANALYZER

Richard Douglas Lowe, Sunnyvale, Calif., assignor to Electronic Associates Inc., Long Branch, N.J.

Filed May 3, 1971, Ser. No. 139,414
Int. Cl. H03b *3/02*
U.S. Cl. 331—106 **3 Claims**

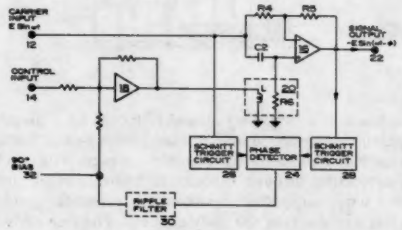


The specification discloses an improved radio frequency-direct current (RF/DC) generating circuit for use with a quadrupole mass analyzer. A free-running oscillator is employed to generate the radio frequency signal, the oscillator having diode means in the feedback circuit for limiting the dynamic range over which the oscillator must operate. The output of the oscillator is connected through a coil to the rods of the quadrupole mass analyzer which, in conjunction with the coil function as a tuned circuit, thereby the magnitude of the radio frequency applied to the rods is obtained by Q multiplication. A detector circuit is connected to the output of the coil for producing a feedback signal which is compared with a ramp voltage for driving the output of the oscillator as a function of the control ramp input. The detector output is also fed back to the input of two similar circuits for generating equal magnitude with opposite polarity direct current potentials which magnitude varies as a function of the output of the detector and thereby under control of the input control ramp. Additional diodes are provided in the detector circuit to enable the detector to operate near zero volts.

3,735,288
PHASE MODULATOR

George M. Strauss, Elmhurst, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1971, Ser. No. 213,664
Int. Cl. H03c *3/08*
U.S. Cl. 332—18 **5 Claims**

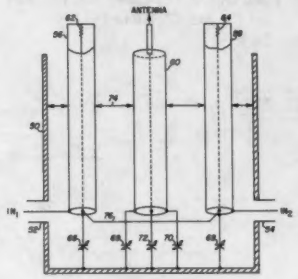


A phase or frequency modulator having an operational amplifier with inverting and noninverting terminals, an RC network wherein R is light responsive, a control signal for controlling the light intensity, and a phase detector for comparing the phase of the modulated and unmodulated signal and feeding back an error signal to the light source.

3,735,289
TRANSMITTER COMBINER HAVING COUPLED TUNED CIRCUITS

Warren B. Bruene, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 26, 1971, Ser. No. 202,330
Int. Cl. H01p *5/12*
U.S. Cl. 333—5 **4 Claims**

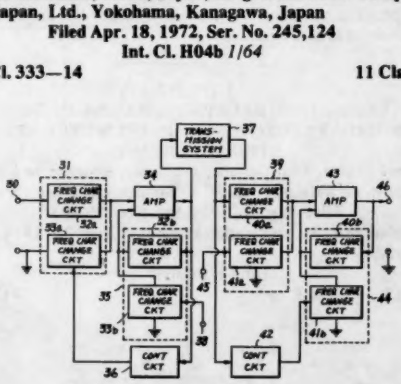


A hybrid coupler for coupling a plurality of transmitters to a single antenna. Inductive coupling through use of variable length transmission line stubs affords tuning over a wide transmission frequency range.

3,735,290
COMPRESSING AND/OR EXPANDING SYSTEM COMPRISING FIXED AND VARIABLE FREQUENCY CHARACTERISTIC CHANGING CIRCUITS

Nasami Yamazaki, Zama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Kanagawa, Japan

Filed Apr. 18, 1972, Ser. No. 245,124
Int. Cl. H04b *1/64*
U.S. Cl. 333—14 **11 Claims**



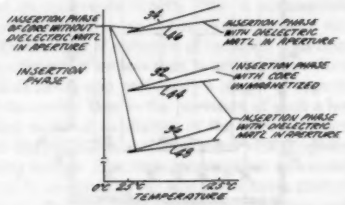
A compressing and/or expanding circuit comprises a first circuit consisting of a frequency characteristic changing circuit having a specific fixed frequency-response characteristic and a frequency characteristic changing circuit including a control element and having a frequency response characteristic variable between a characteristic complementary with said specific fixed frequency response characteristic and a flat characteristic, an amplifier connected in series with the first circuit, and a second circuit provided in a feedback loop associated with the amplifier, which has the same circuit structure as the first circuit. In the compressing circuit, the first circuit, applied with a control signal voltage in response to the level of an input signal, causes its frequency response to vary,

whereas the second circuit, applied with a constant voltage, manifests a flat frequency response characteristic. In the expanding circuit, the first circuit, applied with a constant voltage, manifests a flat frequency response characteristic, whereas the second circuit, applied with a control signal voltage corresponding to the signal level, causes its frequency response to vary.

3,735,291
TEMPERATURE COMPENSATED LATCHING PHASE SHIFTER HAVING COMPENSATING DIELECTRIC IN APERTURE OF FERRITE CORE

Peter W. Smith, Norwalk, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 4, 1971, Ser. No. 185,974
Int. Cl. H01p 1/32
U.S. Cl. 333—24.1 1 Claim

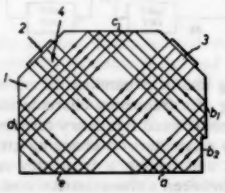

INSERTION PHASE OF CORE WITHOUT DIELECTRIC MATL IN APERTURE
INSERTION PHASE
INSERTION PHASE WITH DIELECTRIC MATL IN APERTURE
INSERTION PHASE WITH CORE UNMAGNETIZED
INSERTION PHASE WITH DIELECTRIC MATL IN APERTURE
0°C 25°C 125°C
TEMPERATURE

A ferrite core latching phase shifter uses the long remanent state as a reference state and thereby provides inherent temperature compensation of the reference phase. The temperature compensation is further augmented by placing in the aperture of the phase shifter a dielectric material selected to have an appropriate dielectric constant and temperature coefficient thereof, thereby providing a core comprised of a composite of the dielectric material and the ferrite. The addition of the dielectric material causes changes of the insertion phase attributable to thermally induced changes of the dielectric constant of the composite core, to offset changes of the insertion phase attributable to thermally induced changes of the remanent magnetization.

3,735,292
ULTRASONIC DELAY LINE HAVING OFFSET BOUNDARY SURFACES AT POINT WHERE BEAM STRIKES SURFACE

Helmut Probst, Ulm/Danube, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany

Filed Aug. 26, 1971, Ser. No. 175,203
Claims priority, application Germany, Aug. 28, 1970, P 20 42 865.3
Int. Cl. H03h 9/30
U.S. Cl. 333—30 R 4 Claims

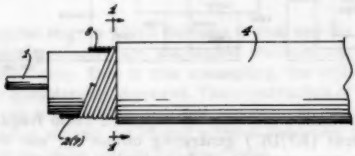


A delay member in which the path of travel of an ultrasonic wave beam from an input transducer to an output transducer associated with the member is lengthened by reflection of the beam from at least one of the planar boundary surfaces of the member. At least one of these surfaces is divided into at least two substantially parallel, but offset, surfaces so that a wave beam from the input transducer impinging on these offset surfaces is separated into at least two wave beams which travel over paths of different lengths to the output transducer. At least one of the separate beams is effective, at certain frequencies, to produce a counter voltage at the output transducer to attenuate, to the desired degree, the voltage developed at the output transducer and improve the transmission characteristic of the delay line.

3,735,293
HIGH FREQUENCY CABLE

Otto Breitenbach, Nurnberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed May 12, 1971, Ser. No. 142,574
Claims priority, application Germany, May 12, 1970, P 20 22 990.7
Int. Cl. H01p 1/00; H01q 13/22
U.S. Cl. 333—84 R 8 Claims

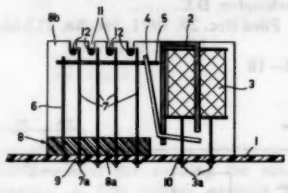


A high frequency conductor systems for development of a partial external field with one or two inner conductors extending along a center line and surrounded by a dielectric substance; a tubular outer conductor or shield, physically encloses the inner conductor and the substance completely, and is constructed from serially interconnected, axially juxtaposed conductor loops providing a closed tube as well as a helical conduction path around said center line.

3,735,294
MULTI-CONTACT TERMINAL SUPPORT ASSEMBLY FOR AN ELECTROMAGNETIC RELAY

Josef Altmann, Wien-Atzgersdorf, Austria, assignor to Telephon-und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne, Wien, Austria

Filed Aug. 27, 1971, Ser. No. 175,650
Claims priority, application Austria, Aug. 28, 1970, A 7821/70
Int. Cl. H01h 63/02
U.S. Cl. 335—134 7 Claims

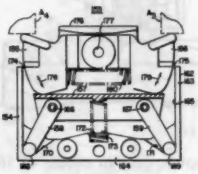


Disclosed is a switching assembly including a plurality of relay elements arranged on a printed circuit board. Each relay element has a plurality of movable contacts with anchored ends projecting through the circuit board, and an array of parallel wires supported between the movable contacts to form fixed contacts of the relay element. The free ends of the wires are bent towards and projecting through the circuit board to be soldered together with the projecting ends of the movable contacts, to assigned strip conductors of the printed circuit.

3,735,295
ELECTRIC CONTROL DEVICES WITH MECHANICAL INTERLOCK

Kurt A. Grunert; John P. Conner, and John J. Dauer, Jr., all of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1972, Ser. No. 238,839
Int. Cl. H01h 9/26
U.S. Cl. 335—160 14 Claims

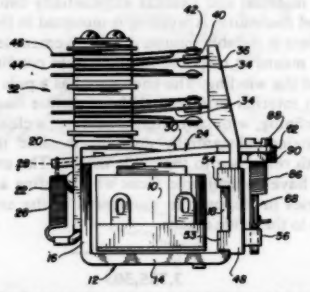


An electric control system characterized by at least two control devices and interlock means therebetween, each control device comprising a stationary contact structure, a movable contact structure, and electromagnetic means associated with the movable contact structure for moving the movable contact structure between open and closed positions with respect to the stationary contact structure, the movable contact structure comprising a cross bar, the interlock means comprising a housing having a base, a cross beam, a pair of links, and a pair of actuators pivotally mounted within the housing, one actuator being disposed in the path of movement of the cross bar of one control device and the other actuator being disposed in the path of movement of the cross bar of the other control device, the upper ends of the link being pivotally attached to the cross beam at spaced locations from each other, and the lower ends of the links being pivotally mounted on the base at spaced distances greater than the space between the pivotal attachments of the upper ends of the links to the cross beam.

3,735,296
SEQUENCE RELAY

Theodore J. Obszarny, Chicago, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 185,240, Sept. 30, 1971, Pat. No. 3,689,857. This application Aug. 3, 1972, Ser. No. 277,767
Int. Cl. H01h 9/24
U.S. Cl. 335—165 3 Claims

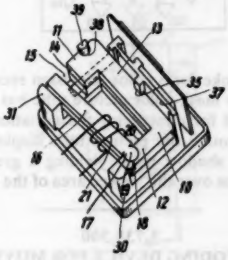


A sequence relay includes a coil mounted on a frame. Current through the coil will drive an armature from a first position to a second position. Attached to the frame is a biased lifter which may translate from a biased first position to a second position by operation of the armature. A pawl mounted on the frame engages the lifter in the second position to hold it in that position even though the armature is released by the coil. When the armature is subsequently operated, it engages and releases the pawl from the lifter, thereby permitting the biased lifter to assume its first position. Switching is effected by an extension of the lifter which engages contacts and moves them from a first to a second position.

3,735,297
RELAY, ESPECIALLY MINIATURE RELAY

Hans Pfenning, Lauffen, Germany, assignor to Bach & Co., Heilbronn, Germany

Filed July 14, 1971, Ser. No. 162,524
Claims priority, application Germany, July 16, 1970, P 20 35 197.7
Int. Cl. H01h 51/06
U.S. Cl. 335—203 9 Claims

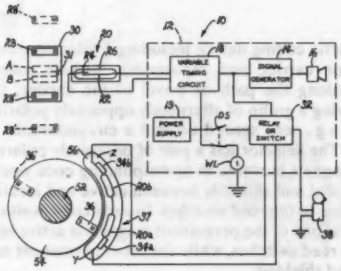


A relay, especially a miniature relay, in which a U-shaped magnetic frame has an armature pivoted on one of the end legs and extending over the other end leg and with a coil surrounding the moveable armature mounted on a stationary coil body. A base plate is provided supporting the magnetic frame and coil body and is provided with switch means operated in response to movement of the armature. The magnetic frame may include a permanent magnet giving the magnetic frame a permanent magnetic bias in one direction.

3,735,298
ONE-WAY MOTION DETECTION SWITCH

Charles E. Colby, 740 S. Locan Street, Fresno, Calif.

Division of Ser. No. 686,660, Nov. 29, 1967, Pat. No. 3,559,205. This application Sept. 28, 1970, Ser. No. 76,330
Int. Cl. H01h 36/00
U.S. Cl. 335—206 3 Claims



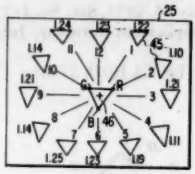
Apparatus including a signal generator for activating warning devices to alert the operator of a motor vehicle, the signal generator being controlled by circuitry including reed switch systems opened and closed by the movement of magnets with the N-S axis thereof passing across the longitudinal axis of the switch system or perpendicular to such axis for controlling a variable timing circuit or a relay.

3,735,299

COLOR TELEVISION DEFLECTION YOKE HAVING REDUCED VARIATION IN BEAM TRIO DISTORTION

Josef Gross, Princeton, and William Henry Barkow, Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,168
Int. Cl. H01f 5/00
U.S. Cl. 335—213 6 Claims



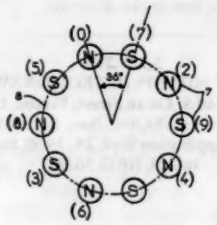
A deflection yoke for a color television receiver utilizing a delta gun shadow mask color picture tube has its winding distribution selected for minimizing the variations of the beam trio distortion around the picture tube display face for permitting use of a shadow mask yielding a greater and more uniform brightness over the viewed area of the tube.

3,735,300

MAGNETIC CODING DEVICE FOR MOVING BODIES SUCH AS CONVEYOR CARRIERS

Jean-Rene Benner; Pierre Dop, both of Seine-et-Marne, and Marcel Caron, Seine-Saint-Denis, all of France, assignors to Jervis B. Webb International Company, Detroit, Mich.

Filed May 10, 1972, Ser. No. 252,002
Claims priority, application France, May 10, 1971, 7116866
Int. Cl. H01h 41/10
U.S. Cl. 335—206 10 Claims



A magnetic coding device including a selector mounted on a conveyor carrier and registerable with a code reader mounted along the path of travel of the carrier, the code reader having a group of alternately oppositely polarized reed switches (e.g., ten) spaced around a circumference in code positions. The selector has a pair of oppositely polarized permanent magnets movable to corresponding code positions by a selector dial and shiftable between active and inactive positions relative to the reed switches. In each code position of the selector dial one of the permanent magnets is active relative to one of the reed switches, while the other permanent magnet is inactive and shielded.

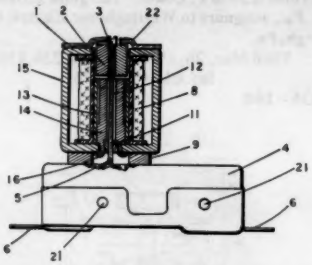
3,735,301

ALTERNATING CURRENT RELAYS

Gregor L. Lang, 295 East Street, Suffield, Conn.

Filed Jan. 4, 1971, Ser. No. 103,429
Int. Cl. H01f 7/10
U.S. Cl. 335—244 6 Claims

A solenoid construction for use as a power relay in which a phase-splitting magnetic core element in combination with a bi-stable snap-switch element enables a compact relay construction yielding a forward power control ratio of 4,800 : 1,



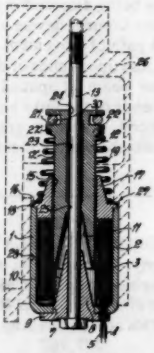
or an equivalent power gain in excess of 36 decibels, without amplification.

3,735,302

ELECTROMAGNET

Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 3, 1972, Ser. No. 215,067
Claims priority, application Germany, Mar. 17, 1971, P 21 12 799.1
Int. Cl. H01f 7/08
U.S. Cl. 335—262 10 Claims



An electromagnet has a pot-shaped enclosure having a cylindrical portion and consisting of magnetizable material, and an elongated guide means which consists of non-magnetizable material and extends substantially centrally of the pot-shaped enclosure. A winding is mounted in the enclosure. An armature is slidably mounted for movement lengthwise on the guide means in response to changes in condition of energization of the winding. The enclosure has a pole piece which defines an internal surface and the armature has an external surface defining, with said internal surface, a clearance whose width remains substantially unchanged while the armature moves with reference to the guide means. The enclosure and armature have conical pole faces which define a conical gap which varies in response to movement of the armature with reference to the guide means.

3,735,303

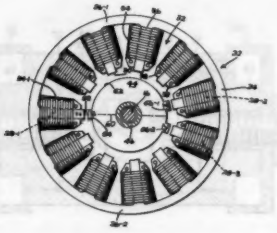
ROTARY MAGNETIC POSITION INDICATOR HAVING ODD NUMBER OF POSITIONS

Phillip L. Harden, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Oct. 18, 1971, Ser. No. 190,150
Int. Cl. H01f 7/14
U.S. Cl. 335—272 6 Claims

A rotary magnetic position indicator which provides an odd number, such as eleven, positions. A magnetic stator structure

is provided including an odd number of radially inwardly extending, equally angularly spaced polar projections respectively having inner ends which define a bore, and an equal number of coils is positioned on the stator structure. A permanent magnet rotor member is rotatably mounted in the bore and has one polar projection of one polarity, and two polar projections of the opposite polarity equally spaced on opposite sides of a diameter of the rotor member which extends through the one polar projection. The two rotor member polar projections are respectively aligned with two adjacent stator polar projections when the one rotor member polar projection is aligned with another stator polar projection. Means are provided for selectively energizing the coils, one at a time, thereby to polarize the respective stator polar projection oppositely from the polarization of the one rotor member polar projection thus causing the one rotor member polar projection to align itself with the energized stator polar projection.



3,735,304

ARRANGEMENT FOR ASSEMBLING TWO GROUPS OF COMPONENTS IN A PREDETERMINED RELATIVE POSITION

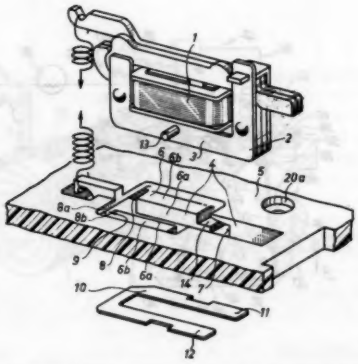
Horst Hanenkamp, Heidmuhle, and Helmut Wolken-Mohlmann, Esens, both of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany

Filed May 12, 1972, Ser. No. 252,677

Claims priority, application Germany, July 10, 1971, P 21 34 503.9

Int. Cl. H01f 7/00

U.S. Cl. 335—278 **10 Claims**



An electromagnet has a yoke with an attaching portion fitting into a guideway in a mounting plate and projecting from the rear face of the plate, a U-shaped leaf spring is mounted in recesses of the mounting plate and engages pins projecting from the attaching portion to hold the electromagnet on the front face of the mounting plate. When a second mounting plate, forming part of another device, is secured to the rear face of the first mounting plate, the attaching portion is resiliently pushed to a position flush with the rear face of the first mounting plate so that the electromagnet is placed in the correct relative position to the other device due to the fact that the position of the electromagnet is determined by the face of the second mounting plate.

3,735,305

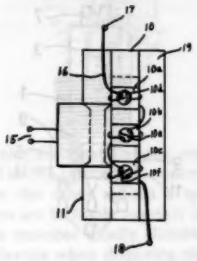
HIGH POWER ELECTRICALLY VARIABLE INDUCTOR

Norbert C. Sinnott, Adelphi, Md., and Harold A. Jones, Jr., Thousand Oaks, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 20, 1972, Ser. No. 290,603

Int. Cl. H01f 21/00

U.S. Cl. 336—110 **2 Claims**



A high power electrically variable inductor includes a U-shaped ferrite core with an electromagnet and a permanent magnet attached to the U-core. The RF variable inductor winding is wound on a multiplicity of separate sections of the U-core. The area of the ferrite material at the RF winding is reduced to minimize the DC magnetic field.

3,735,306

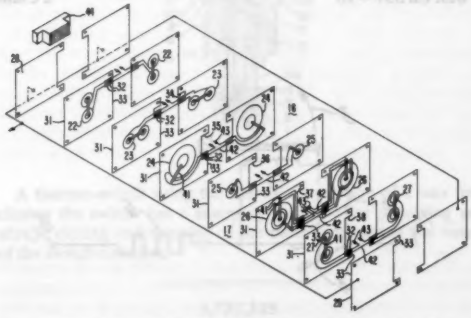
MAGNETIC FIELD SHIM COIL STRUCTURE UTILIZING LAMINATED PRINTED CIRCUIT SHEETS

Donald J. Kabler, Fremont; Robert E. Gang, Sunnyvale, and William O. Reeser, Jr., Fremont, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation-in-part of Ser. No. 82,878, Oct. 22, 1970, abandoned. This application Sept. 15, 1971, Ser. No. 180,685

Int. Cl. H01f 15/10, 27/28

U.S. Cl. 336—192 **20 Claims**



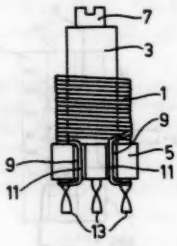
A plurality of separate electrical circuits, for example, electrical coils each formed by printed circuit techniques on a plurality of insulating sheets mounted together in laminated fashion. The terminals of each circuit are brought out to one edge of its mounting sheet at a location displaced from the position of the terminals of the other circuits in the laminated structure, recesses in the terminal edges of the upper sheets in the laminated stack exposing the terminals on the sheets

below. Two separate sets of the laminated structure are employed, matching terminals being in alignment between the two sets for easy electrical interconnection.

3,735,307
COIL SUPPORT

Jacob DeGroot, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,451
Claims priority, application Netherlands, Oct. 3, 1970, 7014556
Int. Cl. H01j *15/10*
U.S. Cl. 336—192 2 Claims

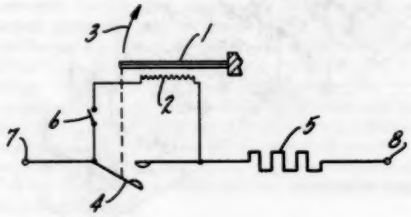


A support made of a thermoplastic synthetic resin, for an electrical component, such as a coil, having a base with cylindrical apertures in which connecting pins are inserted. The pins comprise strips of twisted metal the width of which is equal to the diameter of the apertures.

3,735,308
ENERGY REGULATORS

George Ronald Shepherd, Norfolk, England, assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Oct. 12, 1971, Ser. No. 188,125
Claims priority, application Great Britain, Sept. 27, 1968, 46,070/68; Oct. 15, 1970, 49,162/70
Int. Cl. H01h *61/08*
U.S. Cl. 337—13 2 Claims

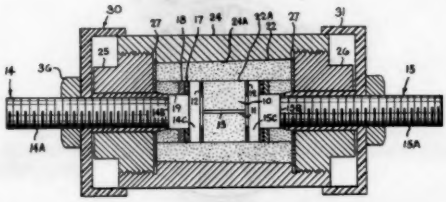


An energy regulator for the intermittent supply of power to a load at high effective power levels. It includes contacts adapted to be connected in series with an electrical supply and a load, a bimetal element mechanically coupled to the contacts, and a heater for the bimetal element connected across the contacts, the contacts being closed, in use, in response to deflection of the bimetal element when it is heated.

3,735,309
VAPOR-STATE LIMITER WITH HIGH PRESSURE HOUSING

Ralph L. Hurtle, West Hartford, Conn., assignor to General Electric Company, Plainville, Conn.

Filed Aug. 6, 1971, Ser. No. 169,680
Int. Cl. H01h *87/00*
U.S. Cl. 337—21 2 Claims

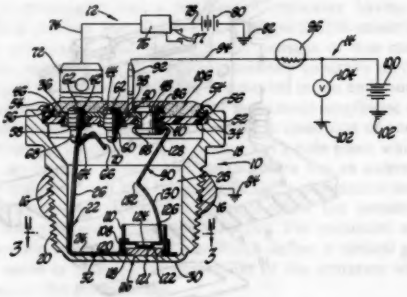


A vaporizing-recondensing type current limiter including a main generally cylindrical ceramic body with at least one hole therethrough, filled with a low-melting point fuse metal. Terminal members and a strong metallic enclosing casing are included, together with insulating means for insulating at least one of the terminal members from the enclosing casing. The insulating means includes a generally cup-shaped insulating plastic cap with a hollow stem having its end tapered and received in wedged relation between a rod-shaped terminal member and a surrounding ring-shaped ceramic member.

3,735,310
TEMPERATURE RESPONSIVE ELECTRICAL SWITCH ASSEMBLY

Aloysius J. Kochanski, 27312 Spring Arbor Dr., Southfield, Mich.

Continuation of Ser. No. 66,227, Aug. 24, 1970, abandoned.
This application Aug. 10, 1971, Ser. No. 170,633
Int. Cl. H01h *71/16*
U.S. Cl. 337—107 10 Claims



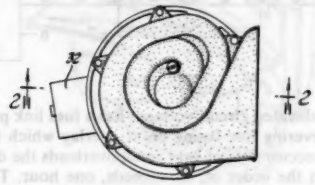
A temperature responsive electrical switch assembly has a single housing containing a bimetallic switching member and a thermistor; a plurality of adjustable contact members, electrically connected to a first terminal member, are positioned as to be alternately engageable with the bimetallic switching member; the thermistor is resiliently held against and in electrically conductive relationship to the housing by one end of an electrically conductive spring member which has its other end connected to a second electrical terminal member.

3,735,311

VIBRATOR TYPE ELECTRICAL CIRCUIT INTERRUPTER

Clark E. Sloan, Jr., Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1971, Ser. No. 203,223
Int. Cl. H01h 37/52
U.S. Cl. 337—108 1 Claim



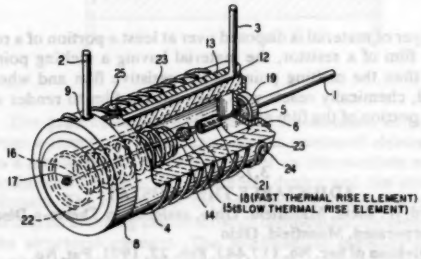
A vibrator type electrical circuit interrupter having normally closed breaker contacts which establish an energizing circuit for an associated electrical coil and which are operated to an electrical circuit open condition upon the energization of the coil to interrupt the energizing circuit. A bimetallic element of the type which deflects in a predetermined direction when subjected to heat is positioned in a location at which it is subjected to the heat of the electrical arc across the breaker contacts upon each interruption of the energizing circuit and at which the deflection thereof reduces the length of time the breaker contacts are closed.

3,735,312

THREE TERMINAL FUSE-RESISTOR DEVICE

Harry Henry Nagel, Westwood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 213,942
Int. Cl. H01h 85/04
U.S. Cl. 337—164 5 Claims



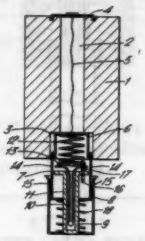
A three terminal fuse-resistor protective device adapted for forming both a shunt connection and a low impedance series connection between the input and load portions of an electric circuit for protecting the circuit against overvoltage conditions and also against both low and high overcurrents. The overvoltage protective means is coupled between two terminals of the device which form the shunt connection. The overcurrent protective means are coupled between a different pair of terminals which define the low impedance series connection.

3,735,313

FUSE PLUG FOR ELECTRICAL INSTALLATIONS

Arthur Eugen Heyerdahl, Martin Borrebekkens vei 39, Oslo 5, Norway

Filed May 19, 1972, Ser. No. 255,072
Claims priority, application Norway, May 21, 1971, 1911/71
Int. Cl. H01h 85/16
U.S. Cl. 337—268 3 Claims



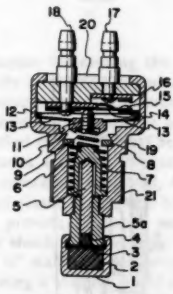
A fuse plug for electrical installations, one contact member of which is formed as two cylindrical, concentric metal sleeves slidably one upon the other against a spring between the sleeves. The sleeves are lockable together in tensioned condition and a release member axially slidable in the sleeves is pushed into the sleeves when disposing the fuse plug into a holder for the fuse plug, and thereby releases instantaneously the spring force, so that the outer sleeve makes a resilient contact with the corresponding contact member in the holder.

3,735,314

THERMO-SWITCH FOR TEMPERATURE CONTROL

Yukio Onishi, 59-2, 6-chome, Nakasato, Kiyose City, Tokyo, Japan

Filed June 26, 1972, Ser. No. 266,379
Int. Cl. H01h 37/46
U.S. Cl. 337—382 6 Claims



A thermo-switch using the thermol expansion of a wax for closing the switch has a snapping structure for providing an abrupt closing and opening of the switch increasing the wear of the switch contacts.

3,735,315

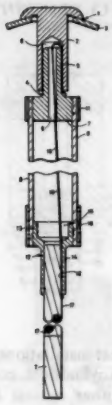
FUSE LINKS FOR DROPOUT EXPULSION FUSES

John Atkinson Swarbrick, Ringwood, and Vaclav Puta Thornbury, Victoria, both of Australia, assignors to Stanger & Co. Ltd., Victoria, Australia

Filed Oct. 15, 1971, Ser. No. 189,625
Int. Cl. H01h 85/04
U.S. Cl. 337—290 10 Claims

A fuse link for dropout expulsion fuses (distribution cut out fuses) which comprises a vulcanized fiber tube having top and

bottom arcing contacts secured in its ends and a fusible element extending between and held in electrical contact with said top and bottom arcing contacts. The fusible element comprises a plurality of thin silver wires which are coated with a



mixture of a compound which burns and a compound which decomposes to produce oxygen at temperatures in the region of the fusing temperatures of silver. On fusion an arc is created and the coating explodes to ensure vaporization of the fusible element and also expulsion of the bottom arcing terminal.

3,735,316

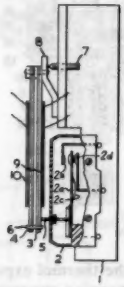
CARRIER CURRENT RELAY

John B. Thorsteinsson, Box 550, Brandon, Canada

Filed Sept. 30, 1971, Ser. No. 185,036

Int. Cl. H01h *37/52*

U.S. Cl. 337—335 **3 Claims**



The disclosed bistable relay has a bistable switch operable into either stable state from the other by an actuator comprising two bimetals arranged to defect in opposite directions due to selective heating. The switch-actuating ends of the bimetals are constrained to deflect together and yet they can slide in relation to each other. Brief selective energization of heaters causes operation of the relay — and the switch — in opposite directions. Thereafter the switch remains set, and the bimetals compensate mutually for ambient temperature variations. The common mount of both bimetals is adjustable for proper relationship between the actuating bimetals and the bistable switch.

3,735,317

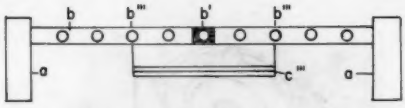
ELECTRIC MULTIBREAK FORMING CARTRIDGE FUSE

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed May 1, 1972, Ser. No. 249,707

Int. Cl. H01h *85/04*

U.S. Cl. 337—291 **4 Claims**



A fuse for elevated circuit voltages has a fuse link provided with a link-severing low fusing point overlay which forms a break on the occurrence of very small overloads the duration of which is in the order of, or exceeds, one hour. The fuse further includes means forming series breaks upon formation of an initial break in the fuse link. These means include a shunt across the overlay portion of the fuse link adapted to generate relatively large amounts of heat at the ends thereof conductively connected to the fuse link and adapted to generate relatively small amounts of heat per unit of shunt length in the center region of the shunt.

3,735,318

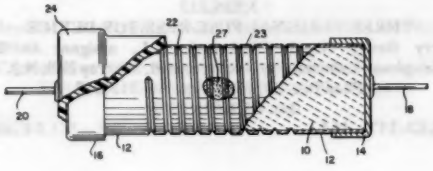
FUSING RESISTOR

James B. Bucklin, Brazil, and Jay Utken, Frankfort, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Nov. 4, 1971, Ser. No. 195,689

Int. Cl. H01h *85/04*

U.S. Cl. 337—296 **8 Claims**



A layer of material is disposed over at least a portion of a resistive film of a resistor, the material having a melting point lower than the melting point of the resistive film and when melted, chemically reacts with the resistive film to render at least a portion of the film non-conductive.

3,735,319

ADJUSTABLE THERMOSTAT

Howard W. Bletz, Mansfield, Ohio, assignor to Therm-o-Disc, Incorporated, Mansfield, Ohio

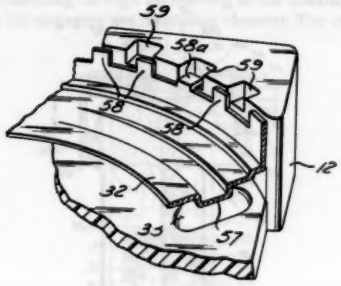
Division of Ser. No. 117,443, Feb. 22, 1971, Pat. No. 3,676,817. This application Apr. 20, 1972, Ser. No. 245,750

Int. Cl. H01h *37/18*

U.S. Cl. 337—347 **14 Claims**

An adjustable thermostat in which an adjusting spring applies an adjustable force to a bimetal snap disc. The adjusting spring is also formed of bimetal and its temperature induced forces add to the temperature induced forces of the disc so that the sum thereof is available for switch operation. The spring rate of the adjusting spring can be adjusted by moving a fulcrum lengthwise of the adjusting spring to provide the thermostat with the desired differential temperature in operation. Such differential temperature adjustment does not materially alter the temperature adjusting range provided by a cam

which engages the end of the adjusting spring. The bimetal snap disc is supported in a cup element having cam surfaces



along one side so that the position of the snap disc is adjusted by rotating the support cup, thus minimizing or reducing the necessity of selective fitting of the thermostat elements.

3,735,320

DEVICE FOR COMPENSATING ELASTIC AFTER-EFFECTS OR CREEPING

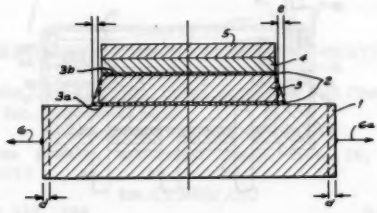
Gottfried Birkholtz, Weiterstadt, Germany, assignor to Firma Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Sept. 13, 1971, Ser. No. 179,976

Claims priority, application Germany, Sept. 23, 1970, P 20 46 855.7

Int. Cl. G01l 1/22

U.S. Cl. 338—2 **5 Claims**



The present device prevents the transmission of creeping from a structural element to another structural element such as a measuring device, by means of an intermediate member positioned between the measuring device and the structural element. The material of the intermediate member is selected so that its creeping characteristics compensate the creeping of the structural element. The intermediate member may be further selected to also compensate for creeping due to temperature changes.

3,735,321

THERMISTOR

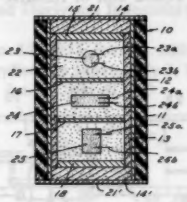
Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Southfield, Mich.

Filed June 18, 1971, Ser. No. 154,271

Int. Cl. H01c 7/04

U.S. Cl. 338—22 R **8 Claims**

A thermistor is formed from a mass of fine particle diamonds, cubic boron nitride, silicon carbide, or mixtures thereof, the particles being doped with boron or beryllium to reduce their electrical resistivity. The thermistor is fabricated by positioning contacts in the mass and sintering at a tempera-



ture of at least 1,300° C under pressure conditions such that the particles are stable in the crystalline form they had immediately prior to the sintering step.

3,735,322

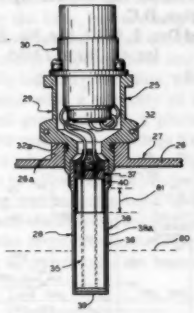
TEMPERATURE SENSOR

Steven J. Heiress, Chicago, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,106

Int. Cl. H01c 7/00

U.S. Cl. 338—28 **5 Claims**



A temperature sensor for sensing the temperature of air moving at low velocity including a transducer assembly having a temperature transducer element in association with a shield or case capable of having fast response and a high degree of accuracy at a specified temperature. The temperature transducer element includes a bobbin of plastic film over which wire sensitive to temperature is wound. A cover is provided over the wire, also of plastic film, and is bonded to the wire as is the bobbin to provide a stable assembly capable of withstanding severe shock and vibration. The invention also includes a method of making a temperature transducer assembly and in mounting it within a shield or case to avoid contamination with the air, while not sacrificing performance.

3,735,323

PRESSURE-TO-ELECTRIC, LONG LIFE TRANSDUCER

William D. Marscher, Ithaca, and Harry P. Wertheimer, Horseheads, both of N.Y., assignors to The Bendix Corporation, Elmira, N.Y.

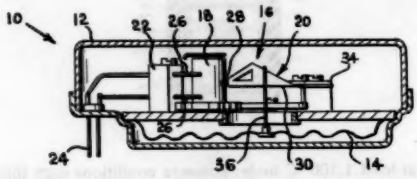
Filed Sept. 22, 1971, Ser. No. 182,781

Int. Cl. H01c 13/00

U.S. Cl. 338—41 **10 Claims**

A pressure-to-electric transducer having increased life potential is disclosed herein. The transducer is comprised of a canister having a movable wall member, electrical means for generating an electrical signal indicative of wall movement, and means to cause displacement of the movable wall member in response to a pressure variation on one side of said wall. The improvement is comprised of means for periodically ad-

justing the relationship of the electrical means so that wear caused by relative movement within the electrical means is uniformly distributed. In particular, the electrical means are comprised of a wound coil of resistive wire and a movable



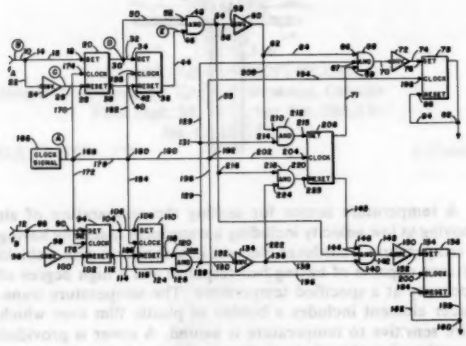
wiper means for sliding engagement with said coil. Means are provided to alter the relative angular position of the wiper means relative to the coil so that wear caused by the wiping action is uniformly distributed around the coil.

3,735,324

DIGITAL FREQUENCY DISCRIMINATOR

T. H. Phillips, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1971, Ser. No. 204,236
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 **6 Claims**



A digital frequency comparator for determining the difference in frequency between two time-dependent input waveforms and for further determining the sign relationship therebetween. Each of the input waveforms is applied to a bistable circuit arrangement which, through the use of logical coincidence gates, modulates the input data into a time-ordered format. A memory bistable circuit in conjunction with further logical coincidence circuit arrangements determines from the time reordered input waveform which one of said waveforms has the greater frequency along with the frequency difference therebetween.

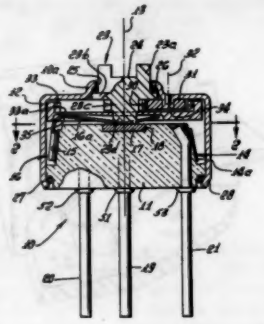
3,735,325

ROTARY POTENTIOMETER WITH FINE ADJUSTMENT

Robert Akashi, 2059 West 161st Street, Gardena, Calif.

Filed May 12, 1972, Ser. No. 252,544
Int. Cl. H01c *9/02*
U.S. Cl. 338—164 **7 Claims**

A miniature potentiometer of high accuracy comprises a support carrying an electrically resistive component extending about a support axis; a rotatable contact in wiping engagement with the component; a rotary member carried by the support



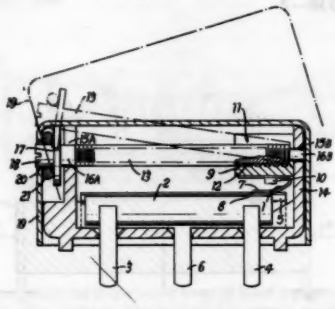
to be rotatably adjusted; rotary gearing including sun, planet and ring gears to transmit rotation between the member and contact with mechanical advantage: and electrical terminals.

3,735,326

ADJUSTABLE ELECTRICAL DEVICES WITH LEADSCREW AND SEALING MEANS

Trevor Frank John Gooding, Guildford, and Geoffrey David Stuart Howse, Farnborough, both of England, assignors to Electrosil Limited, Durham, England

Filed Oct. 26, 1971, Ser. No. 192,385
Int. Cl. H01c *5/02*
U.S. Cl. 338—180 **5 Claims**



An adjustable resistance comprises a support for an adjusting shaft and a casing having an access aperture for the shaft, an O-ring acting between facing surfaces, one fixed to the shaft and the other being at an inner wall of the casing about said aperture, to seal the aperture and to oppose by compression withdrawal forces on the shaft, and the shaft being pivotally mounted on the support so that it may be displaced from its operating position during assembly to facilitate the engagement of the shaft in the aperture of the casing.

3,735,327

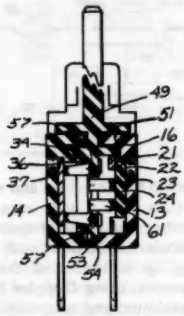
VARIABLE RESISTANCE CONTROL

Arthur L. Rozema; Wilbert H. Budd, both of Elkhart, Ind., and William L. Kelver, Cassopolis, Mich., assignors to CTS Corporation, Elkhart, Ind.

Filed Jan. 7, 1972, Ser. No. 216,136
Int. Cl. H01c *1/02*
U.S. Cl. 338—183 **21 Claims**

A variable resistance control employs a contactor wipably engaging a resistance element and a collector supported by a pair of split housing sections. Positioning tabs extend from the resistance element and collector into undercut portions in the

housing section. Control operating means for moving the contactor relative to the resistance element is positioned in a slot in the housing and provided with parallel longitudinal grooves receiving the side walls of the slot. A contactor having a pair of spaced bars has a continuous strip connecting the spaced bars and extending through an opening in the control operating means for engaging the resistance element. The contactor



resiliently biases the control operating means against one side wall of a channel formed in the bottom wall of the housing. End walls of the housing are provided with a groove extending therearound such that a U-shaped mounting bracket having a pair of spaced legs and a connecting portion is disposed in each of the grooves. The legs have ends bent toward each other to firmly engage the housing and maintain the housing section in assembled relationships.

3,735,328

SHEATHED ELECTRICAL RESISTANCE HEATING ELEMENT

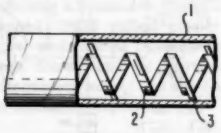
Motohiko Yagi, Odawara, Japan, assignor to Fuji Photo Film Co., Inc., Kanagawa, Japan

Filed Nov. 16, 1971, Ser. No. 199,191

Claims priority, application Japan, Nov. 16, 1970, 45/100912

Int. Cl. H01c *1/02*

U.S. Cl. 338—270 **8 Claims**



A sheathed electrical resistance heating element consisting of a helical electrically resistant heating strip having segmented portions projecting outwardly in a tangential direction along the helices of the coil strip. The helical heating coil is placed in a heat resisting sheath of a transparent crystalline tube. The helical heating coil strip is positioned within the heat resisting tube by the segmented portions which project from the surface of the coil and contact the inner wall of the tube.

3,735,329

DISTRIBUTOR APPARATUS

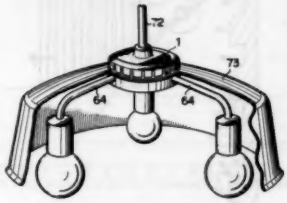
Tadao Funabashi, Kawasaki, and Kazuaki Murata, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa and Moriyama Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1972, Ser. No. 220,340

Claims priority, application Japan, July 3, 1971, 46/48969

Int. Cl. H01r *17/00*

U.S. Cl. 339—89 R **10 Claims**



A distributor apparatus adapted to mechanically and electrically connect a plurality of distributor members thereto and allow the latter to extend from the apparatus, comprising a base, cover covering the base, and a clamp ring secured and fixed to the base, characterized in that the base and cover are provided with oppositely disposed first and second annular electrodes electrically led to a power line, the base being at its periphery wall formed with a plurality of openings spaced from each other and provided with a plurality of compartments opposite to the respective openings for suitably receiving a terminal fixture whereby the terminal fixture is received in the compartment to allow the distributor member to pass through the opening and to extend the distributor member from the apparatus and the first and second annular electrodes are in contact with the respective contact terminals in the apparatus by covering the cover over the base and screwing the clamp ring over the base.

3,735,330

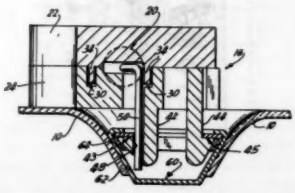
KINESCOPE ANODE CONNECTOR

Seymour Offerman, New York, N.Y., and Robert B. Pittman, River Edge, N.J., assignors to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,608

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R **22 Claims**

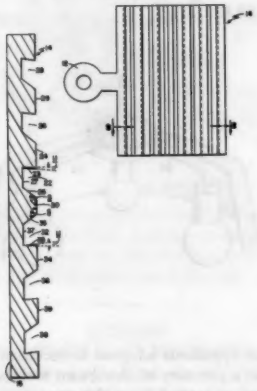


A connector has a body with a means for receiving a wire. Operatively connected to the body is a means for disposing the wire adjacent a receptacle and a means for resiliently urging the wire into a direct engagement with the receptacle without using any intervening conducting elements. The body can be made in two sections, and the disposing and bias means can be lugs integrally formed with one of the sections.

3,735,331
ELECTRICAL CONNECTOR

Paul E. O'Donnell, Whitman, and H. Vincent Leaf, Marshfield, both of Mass., assignors to Ark-Les Switch Corporation, Watertown, Mass.

Filed Apr. 19, 1972, Ser. No. 245,523
Int. Cl. H01r 9/08
U.S. Cl. 339—97 C 10 Claims

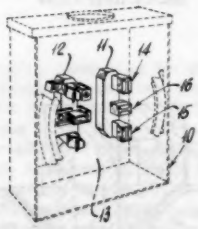


An electrical connector for crimping onto wires including a ferrule-forming portion having its inner surface formed with a plurality of grooves with generally flat land surfaces therebetween, at least some of said grooves having an undercut side surface, preferably of at least about 1° to 6° for the purpose of shearing portions of wire crimped therein to expose the bare metal underlying any layer of insulation, corrosion, etc. thereon in order to provide the necessary low ohmic electrical path between wire and connector as well as a superior mechanical connection therebetween.

3,735,332
INSULATING MEANS FOR A JAW OF A STAB-MOUNTED ELECTRICAL METER OR THE LIKE

James R. Tirrell, Charlottesville, Va., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Oct. 12, 1971, Ser. No. 187,998
Int. Cl. H01r 9/08
U.S. Cl. 339—217 R 9 Claims

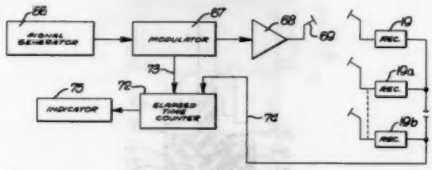


The invention contemplates an integral rectangularly prismatic cup-shaped insulating jacket having a cavity shape which is adaptable for end-wise insertion over the projecting end of a stab-type meter jaw or the like. The jacket has integral formations having detent interference with the jaw over which it is inserted, thereby rendering the jacket self-retaining in its assembled relation to the jaw. The "closed" end of the jacket is characterized by a limited stab-receiving and guiding opening, between end-wall portions which effectively cover the projecting outer limits of the jaw.

3,735,333
AIRCRAFT VORTEX DETECTION SYSTEM

Martin Balser, Covina; Arthur E. Nagy, Los Angeles, and Andrew P. Proudian, Chatsworth, all of Calif., assignors to Xonics Inc., Van Nuys, Calif.

Filed Dec. 23, 1971, Ser. No. 211,478
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 12 Claims

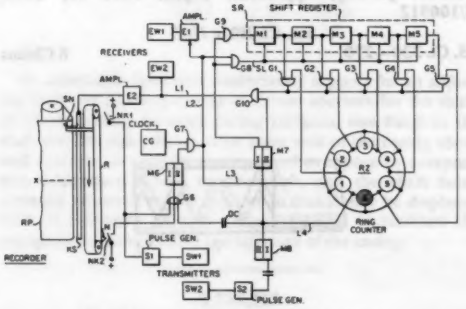


An improved system for detection and measurement of aircraft wing tip vortices over a wide area. An acoustic echo system with transmitter and receiver spaced from each other in a plane perpendicular to the flight path for illuminating the vortex and picking up scattering of the transmitter signal produced by the vortex, using Doppler frequency spectrum analysis with the maximum and minimum frequencies providing a measure of vortex intensity. A plurality of receivers operating with a common transmitter providing coverage of an area of interest along a flight path. A transmitter covering a broad area by a broad beam acoustic transducer or a plurality of narrow beams, and means for identifying a specific zone within the broad area occupied by the vortex being analyzed.

3,735,334
METHOD AND SYSTEM FOR THE POSITIONALLY CORRECT RECORDING OF TWO ECHO SIGNALS FROM RESPECTIVE ECHO SOUNDINGS TAKEN IN MUTUALLY OPPOSED SOUNDING DIRECTIONS

Erhard Ahrens; Christian Prill, both of Kiel, and Hans H. Wendorff, Heikendorf, all of Germany, assignors to Electroacustic GmbH, Kiel, Germany

Filed Jan. 6, 1971, Ser. No. 104,302
Claims priority, application Germany, Jan. 7, 1970, P 20 00 405.1; Jan. 7, 1970, P 20 00 404.0
Int. Cl. G01s 9/70
U.S. Cl. 340—3 R 10 Claims

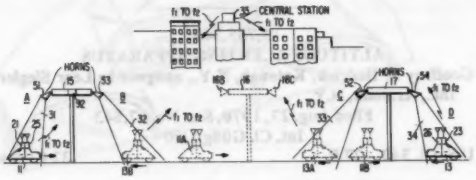


In echo sounding methods and systems for recording on a chart recorder the two echo signals stemming from echo soundings taken in mutually opposed sounding directions, the two echo signals are written into the chart recorder in the same writing direction. One of the two signals is intermediately stored in a memory, preferably a shift register, and is thereafter transferred in the reverse sequence from the memory into the recorder.

3,735,335
ELECTRONIC FENCE VEHICLE LOCATER TRANSMITTER AND SYSTEM USING SAME

Gerald Stanley Kaplan, Trenton, and Joshua Shefer, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,961
Int. Cl. G08g 1/12; G01s 9/00
U.S. Cl. 340—23 5 Claims

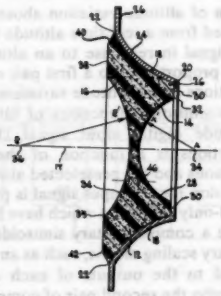


A vehicle location system in which two different messages are sent in opposite directions from a common vehicle locator transmitter. Vehicle location and direction is determined by the vehicle storing the different messages and, when interrogated, replying with a message that indicates on which side of the vehicle locator transmitter the vehicle is located.

3,735,336
ACOUSTIC LENS

Edward M. Long, Oakland, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 10, 1971, Ser. No. 122,887
Int. Cl. H04b 13/00; H04r 7/02
U.S. Cl. 340—8 L 11 Claims



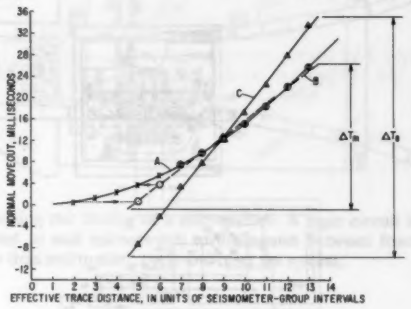
An acoustic lens for dispersing sound waves transmitted therethrough comprising a biconcave, plano-concave or negative meniscus shaped, open celled plastic foam. Lens is preferably biconcave and formed from an explosively reticulated polyurethane foam, and is particularly useful in dispersing high frequency sound waves from loudspeaker systems to provide balanced response.

3,735,337
MINIMIZING MULTIPLE REFLECTING

Moses B. Widess, Houston, Tex., assignor to Amco Production Company, Tulsa, Okla.

Filed July 22, 1971, Ser. No. 165,258
Int. Cl. G01r 1/28
U.S. Cl. 340—15.5 TD 7 Claims

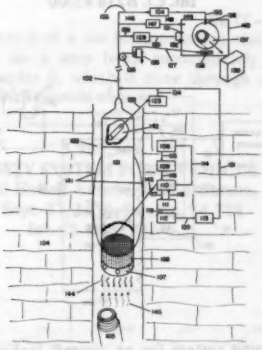
Seismic traces obtained using the common depth point technique are time-corrected first to remove normal moveout corresponding to primary reflections, then further time-corrected to increase the variation of time at which multiple reflections occur on the various traces. The traces are then summed, which decreases the amplitude of multiple reflections relative to those of the primary reflections. Preferably before the second time correction, selection is made of traces such that there is approximately a linear residual normal moveout of multiple reflections on the traces selected. The second time correction does not seriously affect the primary reflections either in amplitude or arrival time. After the second time correction, the selected traces are summed for visual presentation.



3,735,338
FORWARD LOOKING SONIC WELLBORE INSPECTOR

Charles A. Aldrich, and Karl M. Land, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed July 30, 1971, Ser. No. 167,720
Int. Cl. G01v 1/00
U.S. Cl. 340—18 R 8 Claims

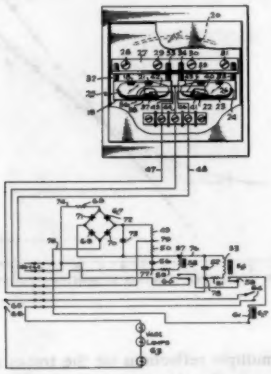


A forward looking sonic wellbore inspector comprising a segmented acoustic transceiver utilizing oriented piezoelectric crystals to produce seismic energy which is reflected by a fish lost within the wellbore. Reflected energy waves from the fish are received by the piezoelectric crystals, the associated stress generates a voltage which is received by a transducer segmented scanner amplified and filtered into a signal utilized in conjunction with an orientation device and depth indicator to locate the fish and project a visual display at the earth's surface of the exact orientation of the fish in the wellbore.

3,735,339
SAFETY SYSTEM FOR VISUAL APPROACH

Clarence B. Knudson, Inglewood, Calif., assignor to Hughey and Phillips, Inc., Burbank, Calif.

Filed Nov. 15, 1971, Ser. No. 198,509
Int. Cl. B64f *1/18*; G08g *5/02*
U.S. Cl. 340—25 8 Claims

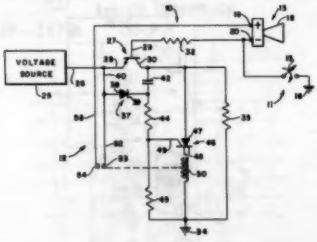


An improved safety system for visual approach slope indicator installations at airports is described which does not disable the installation when transient displacements of the key visual elements occur but does disable the installation when long term displacements of the key visual elements occur in such magnitude as to make dangerous reliance on the installation by the pilot of an approaching aircraft.

3,735,340
STALL WARNING SYSTEM UTILIZING AN ELECTRONIC TIME DELAY

Thomas S. Donnelly, Willoughby, and William C. Seidel, Chagrin Falls, both of Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

Filed Apr. 10, 1970, Ser. No. 27,380
Int. Cl. B21o *45/00*
U.S. Cl. 340—27 SS 12 Claims

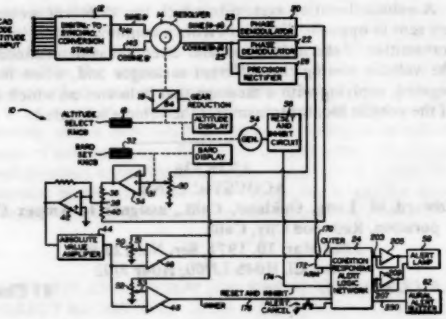


Astall warning system for an aircraft including means for providing a signal indicating that the airflow at an airfoil on the aircraft is about at its stagnation point, means for providing a warning signal responsive to the condition sensed by the sensing means, and means for inhibiting the actuation of the warning means for a predetermined short period of time after the stall condition is sensed. In a preferred embodiment, the inhibiting means includes an electronic time delay circuit comprising a source of electrical potential, a transistor switch in circuit with the source of potential and wit the sensing means, and charge storage means in circuit with the transistor switch for storing a charge having a first magnitude when the transistor switch is non-conductive and a second magnitude when the transistor switch is conductive. The conductivity of the transistor switch is controlled by the sensing means. The storage of charge at the second magnitude by the charge storage means causes a controlled transistor to conduct at a predetermined time after the transistor switch becomes conductive. When the controlled transistor conducts, the coil of a relay is energized to actuate a contactor switch in circuit with the warning device. Thus, the actuation of the warning device is delayed for a predetermined short period of time to eliminate inadvertent operation due to the sensing of a gusting air condition by the sensing means.

3,735,341
ALTITUDE ALERTING APPARATUS

Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,543
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R 32 Claims



An indication of altitude variation about a preselected altitude is provided from a real-time altitude digital code information input signal in response to an altitude alert control signal which is proportional to a first pair of complementary sinusoidal functions of the altitude variation. A second pair of complementary sinusoidal functions of altitude is provided from the altitude digital input signal. The first pair of sinusoidal functions is a function of the second pair of sinusoidal functions and the preselected altitude. A digital-to-synchro conversion for the input signal is provided by means of a pair of read-only memories which have been programmed to each provide a complementary sinusoidal function of the input and a binary scaling means, such as an R–2R ladder network connected to the outputs of each of the respective memories, whereby the second pair of complementary signals is provided. Each memory has an operating state and a protection state, an output being producible only in the operating state. A source of reference potential which has a value sufficient to maintain the memories in the operating state is connected to the scaling means. A single-shot which includes an operational amplifier and a capacitive charging network for changing the input potentials to the operational amplifier to turn it on and off is included as a trigger for an alert indication in response to a particular condition of the altitude alert control signals.

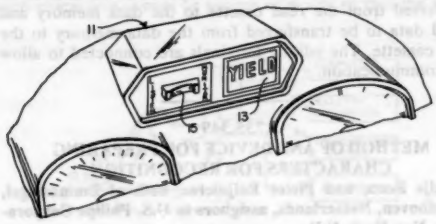
3,735,342
ALERTING SYSTEM RESPONSIVE TO A PLURAL TONE SIGNAL

Conrad Dean Helliker, Tulsa, and Terry E. Wilkinson, Bixby, both of Okla., assignors to La Borge, Inc., St. Louis, Mo.

Filed Mar. 10, 1971, Ser. No. 122,939
Int. Cl. G08g *1/00*
U.S. Cl. 340—34 20 Claims

An alerting signal responsive to the receiving of a signal characterized by a sequence of tones. There is a plurality of

frequency-selective circuits each operative in response to the receiving of a respective preselected one of the tones and sequence-detecting means is responsive to operation of the frequency-selective circuits in predetermined sequence for providing an output signal indicative of the receiving of said



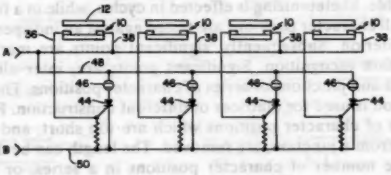
signal. Circuitry is provided for resetting the sequence-detecting means at predetermined regular periodic intervals so that the output signal is not provided unless the respective preselected tones are each received in the predetermined interval between resetting.

3,735,343

BRAKE LINING WEAR WARNING SYSTEM

Buddy F. Lane, and Donald E. Church, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Aug. 12, 1971, Ser. No. 171,071
Int. Cl. B60t *17/22*
U.S. Cl. 340—52 A **8 Claims**



A brake lining wear warning system for indicating when brake linings are dangerously worn and require replacement and provides a warning signal to a vehicle operator when the brake lining has worn a predetermined amount. Engagement of a detector with the brake drum initiates an operator warning signal.

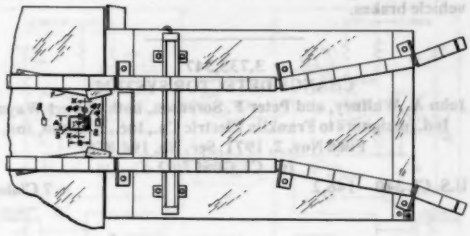
3,735,344

TIRE PRESSURE MEASUREMENT SYSTEM

Arthur Weintraub; Wendell A. Cook, both of Fort Wayne; Robert K. Gatwod, Churubusco, and Kenneth L. De Brosse, Fort Wayne, all of Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 20, 1971, Ser. No. 145,372
Int. Cl. G01l *9/00*; B60c *23/06*
U.S. Cl. 340—58 **8 Claims**

A measurement system for pneumatic vehicle tires wherein a narrow probe aligned with the center rib of a vehicle tire is depressed by said tire against the force of a spring. A sufficiently inflated tire will depress said probe thereby pivoting a



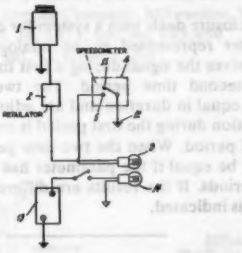
lever causing the closing of a microswitch. A logic circuit is connected to said microswitch to distinguish between front and rear tires and to start, cycle and reset the system.

3,735,345

AUTOMATIC STOP LAMP DEVICE OF A CAR

Yoshimi Morozumi, 2319, Obiori, Sakae-mura, Minamikanbara-gun, Niigata-ken, Japan

Filed Feb. 24, 1971, Ser. No. 118,375
Claims priority, application Japan, Mar. 3, 1970, 45/21073
Int. Cl. B60g *1/50*
U.S. Cl. 340—62 **1 Claim**



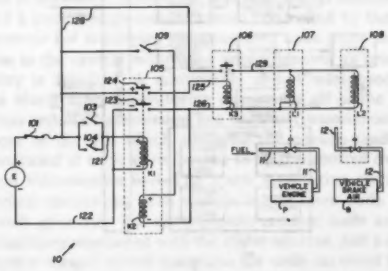
A stop lamp device of a car for preventing rear-end collisions by turning on a stop lamp automatically when the speedometer indicates 0, which is done through contacts in the speedometer with electric circuitry.

3,735,346

SECURITY SYSTEM FOR A VEHICLE

Ralph W. Fox, 116 Hallett Avenue, Port Jefferson, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,728
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **5 Claims**



A security system for a vehicle in which the opening of any sealed door establishes an alert signal that is applied to a time

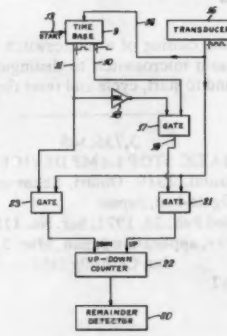
delay controller that operates a pair of disabler devices to halt the vehicle at a preselected time interval after initiation of the alert signal. One disabler device shuts off fuel to the vehicle propulsion engine and the other disabler device activates the vehicle brakes.

3,735,347

CHANGE DETECTOR SYSTEM

John A. Whitney, and Peter F. Sorensen, both of Fort Wayne, Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Nov. 2, 1971, Ser. No. 194,858
Int. Cl. G06f 7/02
U.S. Cl. 340—146.2 **7 Claims**



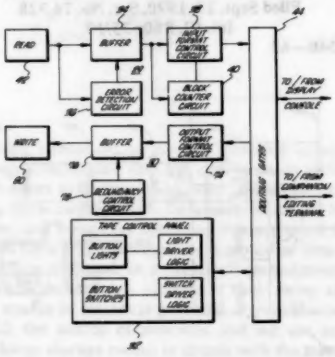
This disclosure deals with a system for detecting a change in a parameter represented by an analog signal. Integrating means receives the signal during a first time period and again during a second time period. The two time periods are preferably equal in duration and are adjoining. The results of the integration during the first period is compared with that of the second period. When the two time periods are equal, the results will be equal if the parameter has not changed during the two periods. If the results are different, a change in the parameter is indicated.

3,735,348

TAPE RECORDING EDITING SYSTEM

Clark Cornell, Pasadena; Gary J. Himler, Granada Hills, and John F. Ahlstrom, Canago Park, all of Calif., assignors to Legalprint, Lynwood, Calif.

Filed June 1, 1971, Ser. No. 148,333
Int. Cl. G06k 5/00
U.S. Cl. 340—146.1 R **23 Claims**



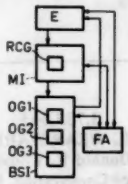
A system for editing records is disclosed. The system generally includes a pair of editing terminals each including a display console having a display screen, a data memory and a keyboard which is operatively connected to allow access to the data memory and to enable characters to be displayed on the screen. Also included at each of the terminals is a data transfer subsystem and a tape deck for a pair of tape cassettes, employed as a read cassette and a write cassette. The data transfer subsystem includes a manually operated control panel and essentially functions to allow tape recorded data to be transferred from the read casette to the data memory and stored data to be transferred from the data memory to the write cassette. The editing terminals are connected to allow intercommunication.

3,735,349

METHOD OF AND DEVICE FOR PREPARING CHARACTERS FOR RECOGNITION

Matthijs Beun, and Pieter Reijnierse, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1971, Ser. No. 196,950
Claims priority, application Netherlands, Nov. 12, 1970, 7016539
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3 H **11 Claims**



A method and device for character rocognition. A character is imaged on a matrix. Skeletonizing is effected in that first character positions are marked, an indispensability criterion being used to determine whether a marked character position may be removed. Various indispensability criteria are possible. Skeletonizing is effected in cycles, while in a final cycle, all character positions are tested against an indispensability criterion. Subsequently, significant points are marked to facilitate recognition. Significant points are, inter alia, end points and junctions of series of character positions. The same method is used for matrices of different construction. Finally, series of character positions which are too short, and which start from a junction, are removed. The length can be defined as the number of character positions in a series, or as the number of character psotions of the shortest possible series connecting the end points of a series to the first junction of that series. The procedure may start from a junction as well as from an end point.

3,735,350

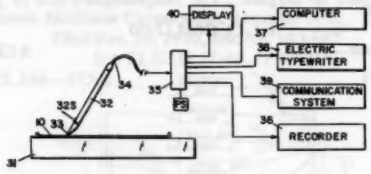
CODE SCANNING SYSTEM

Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.

Continuation-in-part of Ser. No. 806,398, March 12, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 665,526, Sept. 5, 1967, and Ser. No. 526,546, Feb. 10, 1966, Pat. No. 3,499,650, which is a continuation of Ser. No. 826,370, Aug. 10, 1954, abandoned. This application July 6, 1971, Ser. No. 160,007
Int. Cl. G06k 7/10
U.S. Cl. 340—146.3 SY **7 Claims**

An apparatus and method are provided for generating code signals of information for recording or immediately using said information to control a computer, process or machine. In a preferred form of the invention, the apparatus includes a hand-held implement which may be selectively positioned and moved across a selected code by manual manipulation to generate said code on an output as one or more electrical

signals which are fed immediately to a recorder, computer, electric typewriter, machine or other device for controlling its operation or presetting same. Printed or otherwise recorded codes to be scanned are predeterminately positioned on a record member with respect to respective characters, words, groups of words or groups of characters which provide not only a human readable form of information but also means for indicating the location of respective codes representative of such characters, words or groups of words so that the codes



may be selectively reproduced by visually locating the associated characters or words and thereby positioning the hand held implement to reproduce just the codes representative of the selected characters. The codes may be recorded across, beneath or above the characters or words they represent so that positioning the reading implement on, beneath or above the words or characters are properly moving same will result in reproducing codes of information selected to the exclusion of other codes existing immediately adjacent thereto.

3,735,351

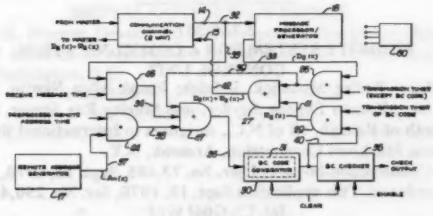
REMOTE STATION ADDRESS VERIFICATION USING ADDRESS CONDITIONED ENCODING

Gary W. Macheel, Anaheim, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed June 29, 1971, Ser. No. 157,923

Int. Cl. G08c *25/00*

U.S. Cl. 340—146.1 C **6 Claims**



A selective calling system incorporating a master station and multiple remote stations includes a means for generating the desired remote station address and properly constituted message at the master station, and a means for generating properly constituted response at the remote station. The response from the remote station is generated in a unique and new way and processed at the master station in a unique and new way, such that the validity of the responding remote station's address may be verified without the necessity of including the remote station's address as part of the return message.

3,735,352

COMMUNICATION TECHNIQUE FOR CONTROLLING CRANE OPERATIONS

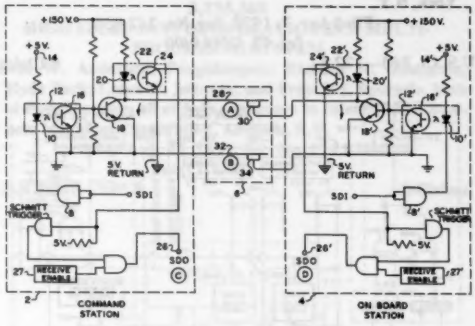
Logan L. Pease, Bountiful, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed July 22, 1971, Ser. No. 165,296

Int. Cl. B61l *3/00*; H03k *17/56*

U.S. Cl. 340—147 R **7 Claims**

A communication system for controlling a mobile vehicle comprising a trolley system transmitting communication signals between an on-board station carried by said vehicle and a command station and including photoelectric coupling



means serving to pass signals between said trolley system and said stations, while electrically isolating said stations from said trolley system.

3,735,353

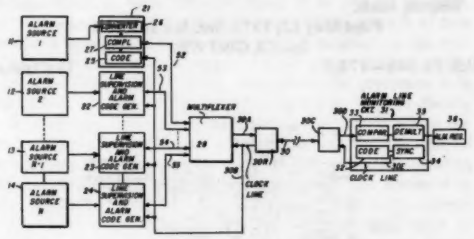
ALARM TRANSMISSION LINE SECURITY SYSTEM UTILIZING PSEUDO RANDOM ENCODING

John C. Donovan, Whitefish Bay; Ramesh Krishnaiyer, Milwaukee, and Frank J. Esser, Wauwatosa, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 28, 1971, Ser. No. 193,450

Int. Cl. G08b *13/08*

U.S. Cl. 340—164 R **22 Claims**

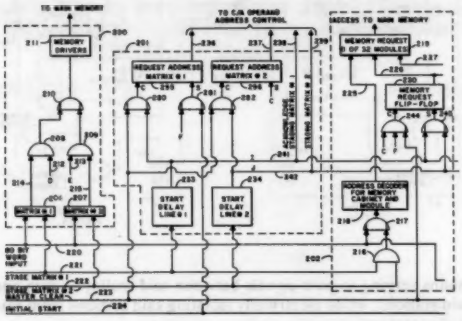


An alarm line security system wherein areas to be protected each include an alarm source having an intrusion detector and an alarm source monitoring circuit including a code generator for generating a code comprised of a pseudo-random sequence of bits for transmission over an alarm transmission line to alarm monitoring circuits at a central monitoring area, and a code complementor circuit controlled by the intrusion detector for modifying the generated code prior to transmission to the central monitoring area whenever an unauthorized entry is detected. A multiplexer circuit interposed between the alarm source monitoring circuits for all of the protected areas and the transmission line enables transmission of one or more of the bits which comprise the pseudo-random codes generated at each alarm source to be transmitted over a common transmission line. The alarm monitoring circuits at the central monitoring area include a reference code generator which generates the same pseudo-random code as the code generators associated with the alarm sources, and a code comparator circuit which compares the code received from each source to the reference code and provides an alarm indication whenever codes from one or more of the alarm sources differ with the reference code.

3,735,354
MULTIPLEXED MEMORY REQUEST INTERFACE

Lyle F. Delaney, Coon Rapids, and Leon A. Mager, St. Paul, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,030
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 8 Claims

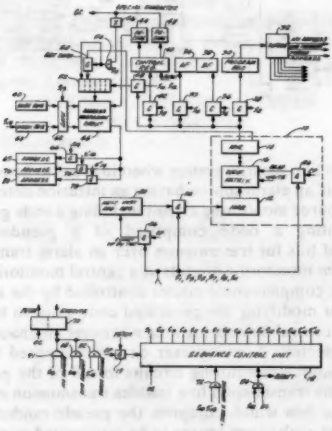


A multiplexed memory request interface capable of staging one memory access request while an immediately previously received memory access address request is being received and processed in the memory, and employing a common memory access path and other common circuitry for both address requests.

3,735,355
DIGITAL PROCESSOR HAVING VARIABLE LENGTH ADDRESSING

Edward Balogh, Jr., Diamond Bar, and Darwen J. Cook, Monroviar, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,446
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 10 Claims

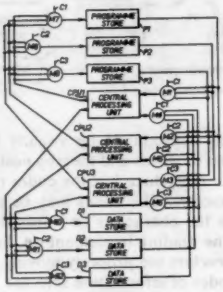


A data processor in which the address fields within the instructions may be of two different lengths in terms of the number of address digits in the field. The number of digits in the address field is determined by the digit in the most significant digit position of the address. If the most significant digit is coded to be a special character, the next six digits are used as the address. If the most significant digit is not coded to be the special character but a decimal digit, it is used together with the next four digits as the address.

3,735,356
DATA PROCESSING ARRANGEMENTS HAVING CONVERTIBLE MAJORITY DECISION VOTING

Michael Harold John Yates, Writtle, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Sept. 13, 1971, Ser. No. 179,764
Claims priority, application Great Britain, Sept. 25, 1970, 45,796/70
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 6 Claims

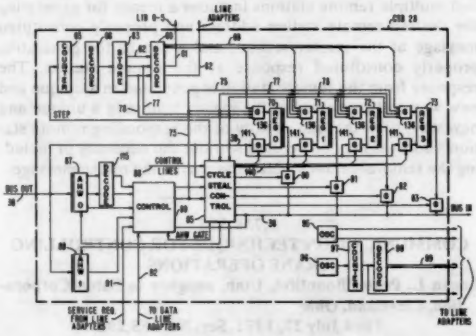


A triplicated data processing arrangement has majority decision elements between the different portions of each processor. The arrangement is provided with the facility that it can be divided into an independent processor and two remaining processors by the application of a control signal to the majority decision elements. The two remaining processors will still apply data signals to the majority decision elements in the normal manner while the independent processor is tested in isolation without affecting the operation of the remaining system.

3,735,357
PRIORITY SYSTEM FOR A COMMUNICATION CONTROL UNIT

Andrew Walter Maholick, Raleigh; Frank Allen Newlin, III, Cary; Ramon Eugene Snyder, and Stanley Ray Stager, III, both of Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 73,485, Sept. 18, 1970, abandoned. This application Sept. 19, 1970, Ser. No. 290,429
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 4 Claims



A priority system is described for a communications controller having a large number of attached communication

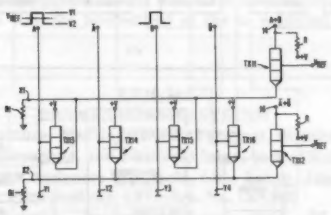
lines. The communication lines are divided into groups of lines having substantially the same service requirements. All lines within a higher priority group will be given service before any service is granted to lines having a lower priority. Within each group, service will generally be accorded to the lines on a first come, first served priority scheme.

3,735,358

SPECIALIZED ARRAY LOGIC

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,087
Int. Cl. G11c *11/40, 17/00*
U.S. Cl. 340—173 R **10 Claims**



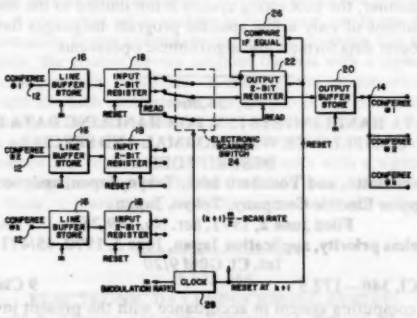
A read only memory comprising a plurality of semiconductor device cells arranged in rows and columns. Spaced conductive lines extending in a Y direction are connected to a first cell terminal. A plurality of second cell terminals defining a row or column are selectively interconnected to one or the other of a pair of adjacent X lines. The semiconductor device cells interconnected between the adjacent X line pair are responsive to digital input signals applied on the plurality of Y lines to generate distinct logical signals on the pair of adjacent X lines.

3,735,359

DIGITAL CONFERENCE BRIDGE

Leo H. Wagner, Oceanport, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 30, 1971, Ser. No. 167,740
Int. Cl. G06f *3/04*; H04m *3/56*
U.S. Cl. 340—172.5 **5 Claims**



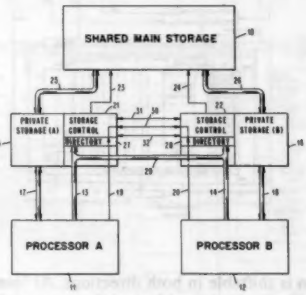
This invention concerns operating a plurality of spaced digital voice communication equipments of the same type in a conference hookup at a digital conference bridge. All of the communication equipments are known in the art and operate at the same sampling or modulation rate. The novel digital conference bridge has a line buffer store and an input character register per conferee, an electronic scanner switch and logic circuit for selecting an output signal from among the input registers at programmed time intervals and to transfer the selected output signal to all of the conferees through one output character register and one output buffer store.

3,735,360

HIGH SPEED BUFFER OPERATION IN A MULTIPROCESSING SYSTEM

David W. Anderson, Poughkeepsie; Richard N. Gustafson, Hyde Park; Lance H. Johnson, and Francis J. Sparacio, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,824
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **8 Claims**



Described is an interlocking scheme which permits multiprocessing in a shared storage configuration with each central processing unit (CPU) having a private high-speed buffer storage utilizing the store-in-buffer concept. The basic problem solved is insuring that all processors access the latest copy of common data with minimum performance impact. The system allows fetch-only copies of the same shared storage block to exist simultaneously in all private storages, but only one private store is allowed to contain a block of data currently being stored into. Disclosed, in addition to the normal controls necessary to search a high speed buffer to determine whether or not the data required by the processor is in the buffer, is means for interconnecting the processors sharing a main storage. The interconnection is for broadcasting address information from one processor to the storage control mechanism of other processors for the purpose of invalidating data in other private storages or insuring that data obtained by one processor from the shared storage is the most current value. That is, if data has been modified in the buffer of another processor, that data must be returned to the shared storage in its modified form to insure that the one processor receives the most current data.

3,735,361

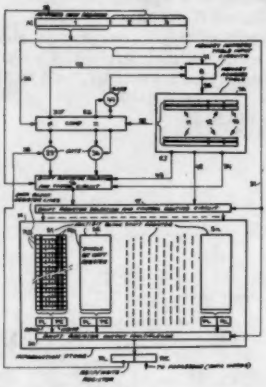
INFORMATION STORE SYSTEM HAVING DATA BLOCK SHIFT REGISTERS

Joseph N. Tasso, 18 rue de la Glaciere, 75 Paris 130, France

Filed Aug. 30, 1971, Ser. No. 176,117
Int. Cl. G11c *9/00*
U.S. Cl. 340—172.5 **7 Claims**

In an information processing system operating under the control of programmes of instruction-words on data blocks each of which is an orderly assembly of bits, an optimized average access store system comprises a plurality of block shift registers, each addressable as a memory section and each having a number of shift block positions at least equal to the total number of information block lines which may be stored in the memory section, and a selection device which upon reception of an address of a section and of an address of a block in said section controls a shift of the block lines in said section up to the coincidence of the addressed block with a read/write station associated with the addressed memory section. The selection device includes an addressing table which

may or not be an associative address store or a random-access store and means for determining the optimal direction to impart to said controlled shift when the shift register constituting



said section is shiftable in both directions. At least one index block may be provided in a block shift register, when desired, for easing and/or speeding the selection operations.

3,735,362

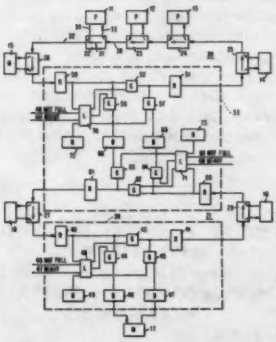
SHIFT REGISTER INTERCONNECTION SYSTEM

Roy Ashany; Leo M. Audretsch, Jr., and Michael J. Pisterzi, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1971, Ser. No. 182,775

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **10 Claims**



Units of a data processing system communicate on a ring connection of shift register stages. The number of stages in a shift register is made small to avoid the delays that accompany the long data paths of a large ring system. Interconnecting stages are provided to direct a message on a first ring to a second ring according to an address contained in the message. Several useful configurations are disclosed. With this arrangement, a system of small rings can be expanded without correspondingly lengthening the average time for transmitting a message in the system.

3,735,363

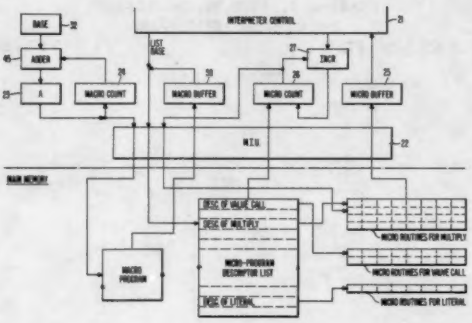
INFORMATION PROCESSING SYSTEM EMPLOYING STORED MICROPROGRAMMED PROCESSORS AND ACCESS FREE FIELD MEMORIES

Leroy Walter Beers, Exton, and Alfred John DeSantis, Norristown, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 7, 1971, Ser. No. 131,889

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 **19 Claims**



This disclosure relates to an information processing system having a free field storage array to accomodate operands and data segments of any size and format and also employing processors wherein program instructions are executed through the implementation of strings of micro instructions which are also initially stored in the main memory and fetched therefrom when required for the implementation of a program instruction. Each processor is provided with a program buffer to hold those micro instructions required for immediate execution and also with a second buffer that may be used as though it were a fixed set of registers in the form of a read only memory to hold those micro instructions required for the fetching of new strings of micro instructions. Processors are also provided with subroutine return stacks and local data storage registers. While each of the main memory units are, in fact, structure oriented, such storage units are provided with isolation units having the capability of extracting and inserting fields of information independent of the memory structure. In this manner, the processing system is not limited to the implementations of only a few specific program languages having particular data formats and algorithimic operations.

3,735,364

DATA HANDLING SYSTEM FOR HANDLING DATA IN COMPLIANCE WITH NORMAL AND SPECIAL DESCRIPTORS

Hiroshi Hatta, and Yoshiteru Ishii, Tokyo, Japan, assignors to Nippon Electric Company, Tokyo, Japan

Filed June 2, 1971, Ser. No. 149,252

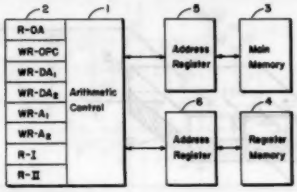
Claims priority, application Japan, June 3, 1970, 45/47131

Int. Cl. G06f *9/20*

U.S. Cl. 340—172.5 **9 Claims**

A computing system in accordance with the present invention processes data in compliance with an instruction and descriptor specified by respective instructions, each descriptor specifying a group of data having at least one characteristic. Each characteristic is composed of an invariable component and, sometimes also, a variable component. Each of the normal and special descriptors includes characteristic information specifying the invariable component. Each of the data and the descriptors includes a tag for determining whether the word is a datum or a normal or a special descriptor. Each instruction including the address of a descriptor further includes, if any, variable information specifying the

variable component. The control unit comprises structure for deriving the characteristic from a read-out descriptor, means responsive to the variable information, if any, for modifying



the derived characteristic, and means for handling the data in compliance with the unmodified or the so modified characteristic.

3,735,365

DATA EXCHANGE SYSTEM

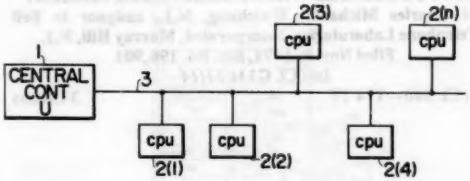
Hideo Nakamura, Hachioji; Kazuo Takasugi, Higashiyamato; Minoru Hiroshima, and Fumiyuki Inose, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 27, 1971, Ser. No. 183,807

Claims priority, application Japan, Sept. 25, 1970, 45/83412

Int. Cl. G06f *15/16*

U.S. Cl. 340—172.5 **16 Claims**



A system for data exchange among a plurality of electronic computers in which all the computers are connected to a bus, and a central control device, for assigning a bus available time to a computer making a request for data exchange communication with another computer, is connected to one end of the bus. A computer, when making such request, sends one bit of information to the control device. Upon receiving this information, the control device supplies the bus with a signal for checking which computer is making the communication request to which computer. When the pair of the computers to exchange data are determined, the addresses of these computers are registered, and the central control device supplies in sequence the registered pair of computers with a signal for permitting the computers to use the bus. Thus, on a time-sharing basis, a plurality of computers communicate with each other.

3,735,366

ELECTRONIC DATA PROCESSING SYSTEM

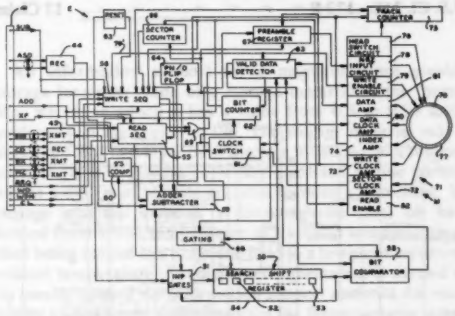
Harold B. Abrams, Olivette; Benjamin O. Haynes, St. Louis, and Glynn P. Williams, St. Charles, all of Mo., assignors to Myles Digital Sciences, Inc., Maryland Heights, Mo.

Continuation-in-part of Ser. No. 876, Jan. 6, 1910, abandoned. This application May 10, 1971, Ser. No. 141,741

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **79 Claims**

A data storage and retrieval system capable of performing various arithmetic functions such as adding and subtracting and which includes two principal units. The first of these units is a console which contains a keyboard for introducing data, a display readout, and various switches to perform the data introduction, storage, retrieval, and the various arithmetic functions, as well as certain modifications to the data. The second unit, which forms part of the system, is a central electronics unit which includes a memory section. The memory section includes input/output electronics as well as track selection electronics. The central electronics unit provides for addition and subtraction functions as well as control of the memory section through actuation of the various switches on the console unit. The data which is to be stored in the memory section and which is to be processed via the various arithmetic function is preceded by an identification number which may represent a stock or part number or other logical identification indicia of the stored data. This data is stored randomly in the memory section and discoverable by systematic searching. The central electronics unit includes devices for introducing



clock pulses needed in the extraction of data in the memory section. In order to achieve high speed data transfer over substantial cable length, an early clocking mechanism to achieve pre-clock-data synchronization is employed. Information on the various tracks of the memory element is compared with the address or identification number manually introduced into a storage register. In essence, the system operates on the basis of a modified form of associative addressing. An embodiment of the system utilizes a combination of a modified form of associative and direct addressing. Corresponding addresses will enable the comparator to generate an output at a clock pulse time. The system is designed so that more than one console unit may be used with a single central electronics unit. Provision is made to prevent simultaneous change of data at a particular address by two different console units. The system of the present invention may also be operated with either numeric or alpha numeric codes.

3,735,367

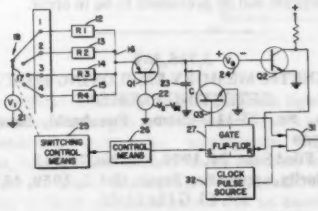
ELECTRONIC RESISTANCE MEMORY

Victor A. Bennett, Jr., Gloucester, Mass., assignor to Currier-Smith Corporation, Lexington, Mass.

Filed Apr. 29, 1970, Ser. No. 32,978

Int. Cl. G11c *13/00*, *5/02*

U.S. Cl. 340—173 SP **10 Claims**



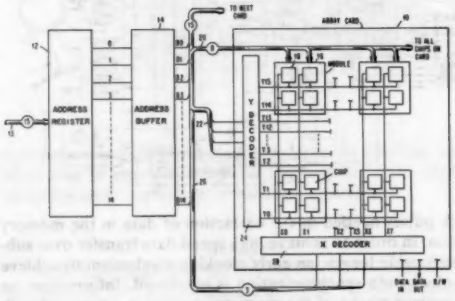
A resistance value represents a digit. A voltage difference applied across each resistance in predetermined sequence

produces a current inversely proportional to the resistance value. This current charges a capacitor until the voltage across the capacitor reaches a predetermined biasing potential that causes a following transistor to conduct at a time inversely proportional to current, and, hence, directly proportional to the resistance. The time interval thus defined may gate through a number of pulses from a pulse source that may function as telephone dialing pulses, the number being proportional to the selected resistor.

3,735,368
FULL CAPACITY MONOLITHIC MEMORY UTILIZING DEFECTIVE STORAGE CELLS

William F. Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1971, Ser. No. 156,637
Int. Cl. G11c 11/00
U.S. Cl. 340—173 R **17 Claims**



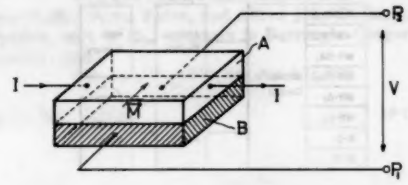
A computer memory, most particularly a monolithic memory, may be constructed of components which contain defective bit cells. During the production process, the monolithic chips are sorted into groups in accordance with the chip sector which contains one or more defective cells. The chips are then mounted on memory cards, with all of the chips having a defect in a given chip sector being mounted on a corresponding card sector. The cards, each of which is produced in a substantially identical manner, are then assembled into a complete memory. The address wiring of the memory is provided in such a manner as to ensure that no given memory word, or defined group of bits within a memory word, contains within it more than one memory cell that is known or suspected to be defective. Means are also provided for deriving from the address of any given memory word the bit location within said word of a defective or suspicious bit. In one embodiment shown herein, the suspect bit is bypassed in favor of a redundant bit provided within the memory system. In another embodiment described herein, the suspect bit is utilized just as if it were a good bit, but, upon detection of an error, the suspect bit will be presumed to be in error.

3,735,369
MAGNETIC MEMORY EMPLOYING FORCE DETECTING ELEMENT

Shuichi Iida, No. 23-11-4-chome, Funabashi, Setagaya-ku, Tokyo, Japan

Filed Sept. 24, 1970, Ser. No. 75,102
Claims priority, application Japan, Oct. 2, 1969, 44/78794
Int. Cl. G11c 11/02
U.S. Cl. 340—174 R **5 Claims**

This invention relates to a memory device using a magnetized ferromagnetic element of an arbitrary shape, a current path penetrating through or closely contacting said element and a force-detecting means which detects a force $\vec{F}$, resulting



from said ferromagnetic element when a current flows through said path and being represented by

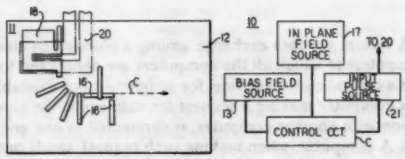
$$\vec{F} = \vec{F}_1 + \vec{F}_2 = \int [(-\nabla \cdot \vec{M})\vec{H}_i + (\vec{i}/c) \times \vec{H}'] \, dv \qquad (1)$$

where $\vec{M}$ is the magnetization
$\vec{i}$ is the current density
$\vec{H}$ is the total magnetic field
$\vec{H}_i$ is the magnetic field produced by the current i
$\vec{H}'$ is the magnetic field obtained from the total field $\vec{H}$ by subtracting $\vec{H}_i$ ($\vec{H}' = \vec{H} - \vec{H}_i$)
c is the light velocity.

3,735,370
INPUT FOR SINGLE-WALL DOMAIN ARRANGEMENT

Paul Charles Michaelis, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1971, Ser. No. 196,901
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF **3 Claims**



The geometry of a magnetically soft input which defines the path of a seed domain employed to generate information-representative domains for movement in a field access single-wall domain memory is modified to ensure that the seed domain be retained at the input when the drive field which causes domain movement in such arrangements is terminated.

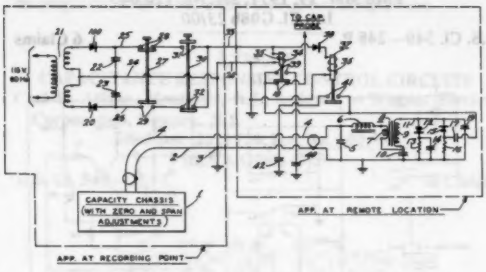
3,735,371
ARRANGEMENT FOR MULTIPLEXING OF A PLURALITY OF REMOTELY-LOCATED CAPACITIVE PROBES

Julius Lerner, Broomall, and Robert Mayer, Ardmore, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 2, 1971, Ser. No. 149,216
Int. Cl. G08c 15/06
U.S. Cl. 340—177 CA **3 Claims**

A switching system for selectively switching in, from a recording point or control room, capacitors which are physically located at a remote point and which are utilized for circuit adjustment in a measuring apparatus utilizing a capaci-

tive-type sensor. Discloses also a multiplexing arrangement for a plurality of sensors, wherein the circuit adjustments of the



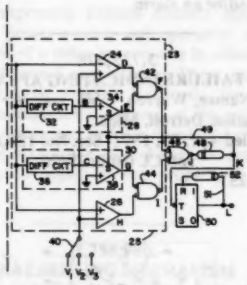
individual sensors may be made selectively, and wherein the sensors may be selectively and individually connected to common capacitance measuring and indicating equipment.

3,735,372

SEVEN OR NINE CHANNEL READOUT WITH ADJUSTABLE THRESHOLD

Edmund G. Coccagna, Villanova, Pa., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed July 2, 1971, Ser. No. 159,313
Int. Cl. G11c *5/44*
U.S. Cl. 340—174.1 H **8 Claims**



A circuit for reading digital information recorded on magnetic tape. Nine transducers are arranged to sense information recorded on nine-channel magnetic tape and seven other transducers are arranged to sense data recorded on seven-channel magnetic tape. The circuit includes means for selecting the outputs of either the first or the second group of transducers so that data from either seven or nine-channel magnetic tape may be read. The input signal obtained from each transducer in the appropriate selected group is fed to a pair of subcircuits, one of the pair providing a signal in response to each negative pulse in the input signal at that pulses's peak and the other subcircuit providing a signal in response to each positive pulse in the input signal at that pulses's peak. Each of these subcircuits contains a threshold circuit which indicates each pulse that is greater (higher or lower) than a predetermined threshold and the output of the threshold circuit is gated with the output of a peak-detecting circuit so subcircuit each subcircuit provides a signal at the peak of each pulse which is greater than a predetermined threshold. The outputs of both subcircuits are fed to an output circuit which provides a signal in response to receiving a pulse-indicating signal from either of the subcircuits. The circuit includes means for adjusting the threshold level of the threshold circuits so that the sensitivity of the circuit may be adjusted. Preferably, the threshold adjustment may be made to a 100 percent threshold level to aid in tuning the circuit.

3,735,373

MAGNETIC MEMORY

Michel Barberon, Paris; Eliane Fruchard, nee Triquet; Robert Fruchart, both of l'Hay-les-Roses; Gerard Louis Lorthioir, Vitry-sur-Seine, and Roland Madar, Rabat, all of France, assignors to Agence Nationale De Valorisation De La Recherche, Paris, France

Filed July 21, 1971, Ser. No. 164,520
Claims priority, application France, July 24, 1970, 7027403
Int. Cl. G11c *11/02*
U.S. Cl. 340—174 NA **12 Claims**

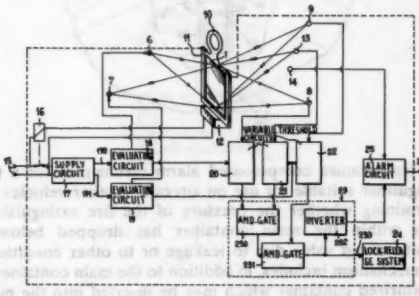
An information support for a magnetic store provides storage locations made of a storage material of the formula Mn_3 Rh N_x in which x has a value from 0.5 to 0.95 and is preferably in the region of 0.8. The storage material may be deposited as a thin layer or at discrete locations on a substrate such as glass or may be uniformly dispersed as fine particles within a matrix of plastics material forming a thin sheet. The storage material assumes a ferromagnetic state on being heated from a first temperature to a second temperature and then being cooled in a magnetic field to a temperature above a critical temperature. Recording of information is carried out by locally heating the information support material, for example by a laser beam, sufficiently for the ferromagnetic state to appear at the recording location on subsequent cooling in a magnetic field. Read-out is achieved by detecting the magnetization at the recording location directly or indirectly, and erasure can be obtained by cooling to below a critical temperature at which the magnetic state disappears.

3,735,374

HOLOGRAM IDENTIFICATION SYSTEM

Michel Rembault, Paris, France, assignor to Thomson CSF, Paris, France

Filed June 25, 1970, Ser. No. 49,612
Claims priority, application France, July 9, 1969, 6923274
Int. Cl. G08b *21/00*
U.S. Cl. 340—213 R **9 Claims**



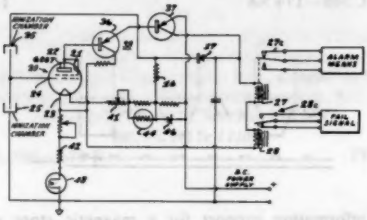
An identification arrangement comprises light sources and photo-detectors arranged in accordance with a predetermined correspondence code. An appropriate key hologram produces, in respect of each of these sources, respective real images on the above photo-detector. Threshold circuits are connected to these photo-detectors and an assembly of coincidence circuits produces a signal when signals of predetermined levels are simultaneously applied to the outputs of all the photo-detectors.

3,735,375

CIRCUIT FOR DETECTION OF SMALL RESISTANCE CHANGES IN IONIZATION CHAMBER DEVICES

Lyman L. Blackwell, Denver, Colo., assignor to Central Investment Corporation, Denver, Colo.

Continuation of Ser. No. 546,663, May 2, 1966, abandoned.
This application Dec. 4, 1969, Ser. No. 876,156
Int. Cl. G08b 17/10; H01j 39/28
U.S. Cl. 340—237 S 3 Claims



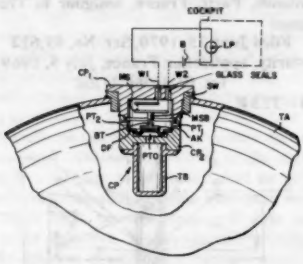
Electronic circuit for detecting small resistance changes in conductors of high resistance wherein the conductor is connected between grid and cathode of a tube connected as a triode and the grid bias is adjusted almost to the point necessary for tube current cut-off, such that some significant amount of grid current flows at all times. The high resistance conductor may be a sensing element such as an ion chamber. The level of grid current serves to identify an alarm, no-alarm or an outage condition with such a sensing device.

3,735,376

LEAKAGE INDICATOR FOR A FIRE EXTINGUISHER

Jack M. Kermer, Los Angeles, and Abdul N. Sitabkhan, El Monte, both of Calif., assignors to HTL Industries, Inc., Monrovia, Calif.

Filed Mar. 5, 1971, Ser. No. 121,452
Int. Cl. A62c 39/02; H01h 35/34
U.S. Cl. 340—242 13 Claims



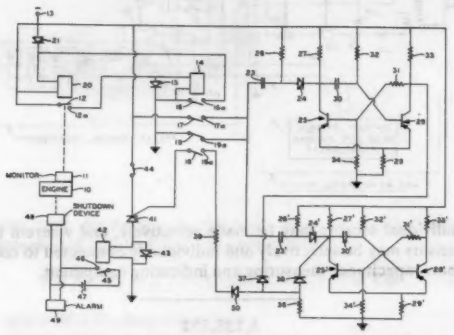
A temperature compensated alarm mechanism for a fire extinguisher suitable for use on aircraft or other vehicles for determining whether the pressure of the fire extinguishing fluids within the main container has dropped below a predetermined value due to leakage or to other conditions. The mechanism includes, in addition to the main container, a miniaturized container which may be inserted into the main container and is filled with like fluids and arranged so that a diaphragm effectively separates the fluids of the two containers from each other. The diaphragm may be actuated in response to a predetermined droppage of the pressure of the main container to produce a signal indicating that the fire extinguisher may have been rendered incapable of responding with sufficient force to a condition requiring prompt attention for extinguishing or suppressing a fire. The mechanism is substantially non-responsive to wide variations in the temperature of the media external to the fire extinguisher.

3,735,377

MONITORING AND SHUTDOWN APPARATUS

Carl Christopher Kaufman, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1971, Ser. No. 126,045
Int. Cl. G08b 23/00
U.S. Cl. 340—248 P 6 Claims



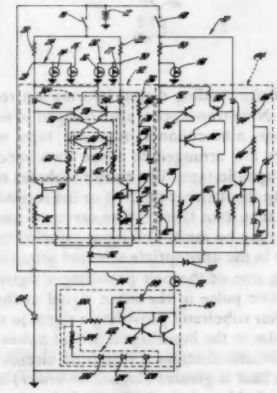
A shutdown and/or alarm system is actuated by a monitor. The system includes an AND circuit which comprises a switch and two multivibrators. The multivibrators have different reset times. A signal from the monitor closes the switch for a given time interval, and triggers and initiates resetting of the multivibrators at the end of this interval. Signals from the multivibrators are passed through the switch to energize a shutdown device and/or an alarm.

3,735,378

LAMP FAILURE INDICATING APPARATUS

James W. McNamee, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1971, Ser. No. 138,602
Int. Cl. G08b 29/00
U.S. Cl. 340—251 4 Claims



Apparatus for indicating inoperativeness of a lamp in any of several lamp arrays. Each lamp array includes one or more parallel connected lamps having predetermined electrical characteristics such that each operative lamp effects a certain voltage drop across the lamp array. A detector network monitors the voltage across each lamp array, which voltage is almost the same as the supply voltage, and generates a certain control signal when one of the lamps has become inoperative. An output amplifier that is responsive to the control signal ef-

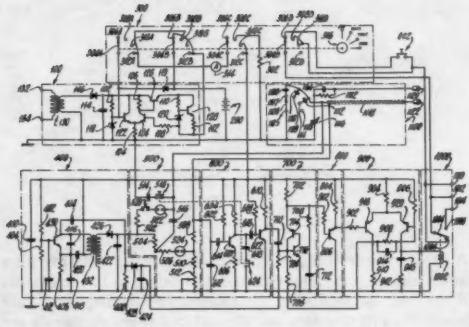
fects energization of an indicator lamp to indicate that a lamp is inoperative when the certain control signal is generated. Several detector networks may be cascaded in parallel to monitor several lamp arrays and each detector network may be employed to monitor either one or two lamp arrays.

3,735,379

CAPACITANCE RESPONSIVE CONTROL CIRCUITS

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Dec. 22, 1970, Ser. No. 100,586
Int. Cl. G08b *13/26*
U.S. Cl. 340—258 C 18 Claims



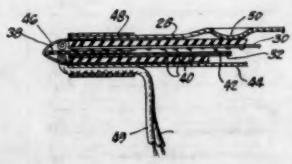
Capacitance-responsive control circuits operable with a low-voltage DC power source and operative to change the energization state of a relay in response to either an increase or decrease in detected capacitance. These circuits include the following features: positive hysteresis, the capability of measuring the capacitance to ground of the protected object which acts as the antenna, and the capability of providing an indication of the magnitude of leakage current in the event that said protected object is not properly insulated from ground.

3,735,380

SEAT SENSING MECHANISM

Walter A. Wolf, and Prentice R. Corn, both of Logansport, Ind., assignors to Switches, Incorporated, Logansport, Ind.

Filed Mar. 2, 1971, Ser. No. 120,263
Int. Cl. G08b *5/00*; H01h *3/02*
U.S. Cl. 340—278 18 Claims



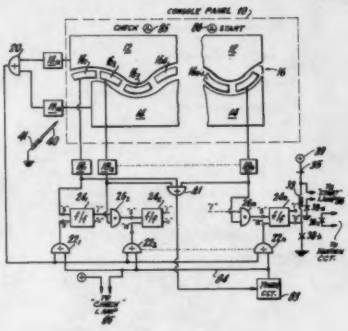
A seat sensing mechanism incorporated into an automobile seat and forming part of a circuit having a warning device and a switch cooperating with seat belts for maintaining an occupant within the seat. The seat sensing mechanism includes an elongated switch consisting of a pair of elongated electrically conductive contact strips that are normally held in spaced relation by a resilient member having a passage for receiving the strips. An elongated actuating member having depressions extending towards the switch is held adjacent the switch and the entire sensing mechanism is enclosed in a casing.

3,735,381

TESTING APPARATUS FOR SELECTIVELY ENABLING CONTROLLED EQUIPMENT

Ernest A. Zadig, Box 425, South Norwalk, Conn.

Filed June 1, 1971, Ser. No. 148,383
Int. Cl. B60k *27/08*
U.S. Cl. 340—279 3 Claims



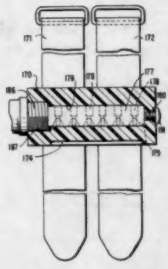
Electronic apparatus requires that the operator of a motor vehicle accurately trace the full course of a segmented undulating serpentine path as a condition precedent to starting a motor vehicle. The path segments must be engaged in seriatum to enable the automobile ignition circuit via intermediate cascaded bistable electronic circuitry.

3,735,382

ELECTRONIC MONITORING CONTROL AND DISPLAY APPARATUS FOR BREATHING GAS SYSTEM

Charles J. Soult, Willingboro, N.J., assignor to Biomarine Industries, Inc., Devon, Pa.

Filed May 27, 1970, Ser. No. 40,891
Int. Cl. G08b *21/00*, *23/00*
U.S. Cl. 340—279 8 Claims

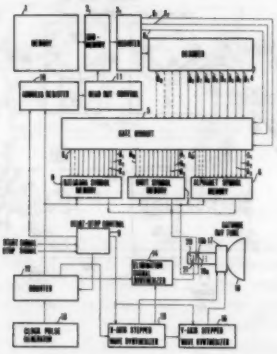


Apparatus for providing a visual display of sensed conditions in a breathing gas system and including a housing having an elongated viewing window and a plurality of miniature color coded lamps mounted on a carrier member within the housing adjacent the viewing window. The lamps are connected to a source of operating current, through a connector which seals the housing, and means are provided for selectively electrically energizing the lamps in accordance with digital signals applied thereto.

3,735,383
DISPLAY APPARATUS UTILIZING CATHODE RAY TUBES

Katushi Naka, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed Jan. 25, 1971, Ser. No. 109,129
Claims priority, application Japan, Jan. 30, 1970, 45/7957
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 10 Claims

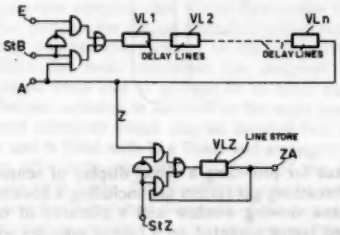


In a display apparatus utilizing a cathode ray tube, the tube is provided with a dot matrix electrode and the apparatus is provided with a plurality of memories for different types of patterns and connected with the matrix electrode, an address register for storing the positions on the screen at which selected patterns are to be displayed, a memory for storing the information regarding the patterns to be displayed, means responsive to the outputs from the address register and the memory for selectively driving the plurality of memories and means for supplying deflection current to the deflection coil of the cathode ray tube in synchronism with the outputs from the plurality of memories.

3,735,384
CIRCUIT ARRANGEMENT FOR CHARACTER DISPLAY ON A TELEVISION DISPLAY SCREEN

Hans-Georg Nussbaum, and Reimer Von Osten, both of Bremen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,410
Claims priority, application Germany, Sept. 19, 1969, P 19 47 532.2
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD 8 Claims

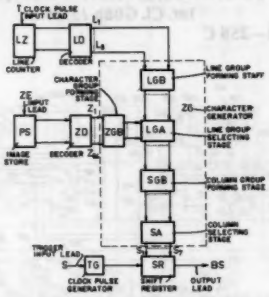


A circulating storage device for TV character generating apparatus using a separate circulating storage element for each line of the TV scan.

3,735,385
CIRCUIT ARRANGEMENT FOR CHARACTER DISPLAY

Jurgen Schroder; Reimer Von Osten; Hans-Georg Nussbaum, and Ulrich Bartels, all of Bremen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,346
Claims priority, application Germany, June 13, 1970, P 20 29 247.1
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD 5 Claims

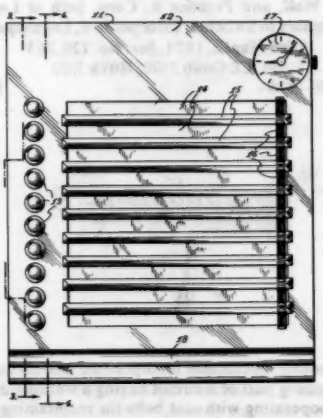


A device for forming image signals for a cathode-ray tube wherein signals are generated corresponding to line segments and column segments of characters to be displayed and wherein the line segment and the column segment signals are combined and stored in a shift register that contains the information corresponding to a plurality of characters whereby the character forming apparatus may operate asynchronously with the display apparatus.

3,735,386
ELECTRICAL MEMORANDUM

Cristoban Manuel Acuna, Astronomos No. 54, Col Escandon, Mexico City, Mexico

Continuation-in-part of Ser. No. 737,419, June 17, 1968. This application July 9, 1971, Ser. No. 161,116
Int. Cl. G08b 5/36
U.S. Cl. 340—323 9 Claims



An electrical memorandum including data recording means comprising first and second sheets disposed one atop the other, pressure being applied to the first sheet to trace an image which appears on the recording means; means to separate the first and second sheets to erase the recorded image; luminous indicating means for indicating the presence of data recorded on the recording means; and power supply

means for supplying power to the luminous indicating means, the power supply means automatically switching from AC to DC upon a failure of the AC supply.

3,735,387

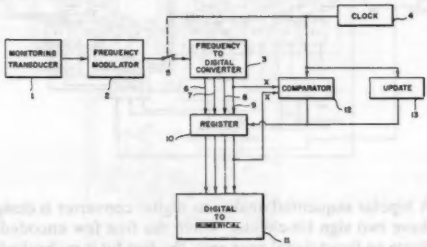
MEANS FOR INHIBITING FLUTTER IN A NUMERICAL DISPLAY

David E. Miller, Beverly, Mass., assignor to General Electric Company, Wilmington, Mass.

Division of Ser. No. 852,050, Aug. 21, 1969, Pat. No. 3,621,391. This application Sept. 7, 1971, Ser. No. 178,178

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 R **6 Claims**



Rapid oscillation between consecutive numbers displayed by a numerical display device is prevented by comparing an incoming digitally-coded signal with one representing the numeral currently registered by the device. If the incoming signal corresponds to a numeral consecutive to the one being displayed, the system inhibits the registration of the new signal by the device. At predetermined intervals the comparision system is bypassed and the device is "updated" by allowing registration of new signals, regardless of their relationship to prior signals.

3,735,388

PATTERN DISPLAY APPARATUS

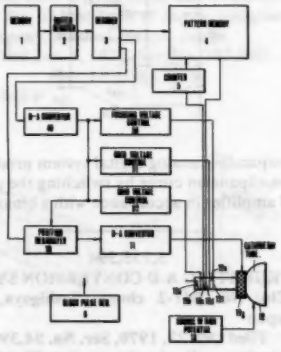
Katsushi Naka, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed July 13, 1971, Ser. No. 162,156

Claims priority, application Japan, July 16, 1970, 45/61976

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **12 Claims**



Apparatus for displaying patterns on an enlarged or reduced scale comprising a cathode ray tube including a cathode electrode, a plurality of matrix electrodes arranged in a matrix, a fluorescent screen, focusing means and deflection means which are disposed between the matrix electrode and the fluorescent screen; a pattern memory connected to the matrix electrodes for storing the patterns of letters, digits, symbols, etc. to be displayed; a memory for supplying an enlargement or reduction signal and a position designation signal of the information of the pattern to be displayed; an enlargement-reduction control connected to the supply memory for controlling the potential applied to the focusing means in accordance with the enlargement or reduction signal supplied from the memory; and a position designator connected to the memory for converting the position designation signal into an analogue signal and for applying the analogue signal to the deflecting means, whereby said focusing means operates to enlarge or reduce the pattern displayed on the fluorescent screen in accordance with the enlargement or reduction signal supplied from the memory and said position designator operates to position said pattern on said screen.

3,735,389

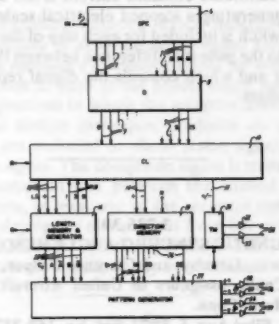
DIGITAL GRAPHIC DISPLAY APPARATUS, SYSTEM AND METHOD

Zoltan Tarczy-Hornoch, Berkeley, Calif., assignor to Zeta Research, Inc., Lafayette, Calif.

Filed Feb. 24, 1970, Ser. No. 13,570

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **27 Claims**



Apparatus, system and method is provided for operating graphic display devices at high speed while receiving digitally coded data at a low input rate. The display is synthesized from line segments of predetermined lengths and finely quantized directions, generated by a pattern generator. Straight lines in any direction and a variety of curves can be displayed at or near the maximum speed of the display device, such as a plotter. The dominant input information consists of incremental update instructions for the length and direction parameters memorized by respective memory means, and the updated parameters are utilized by the pattern generator for generating subsequent line segments.

3,735,390

METHOD AND CIRCUIT FOR CONVERTING AN ANALOG SIGNAL INTO A SIMULTANEOUS DIGITAL SIGNAL

Karsten E. Drangeid, Hedingen, and Andreas Moser, Thalwil, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,823

Claims priority, application Switzerland, Apr. 7, 1970, 5087/70

Int. Cl. H03k *13/02*

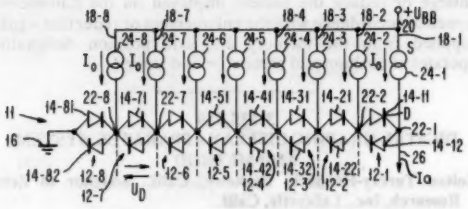
U.S. Cl. 340—347 AD **15 Claims**

The present invention relates to a method for converting an analog signal into a simultaneous digital signal and to a circuit for carrying out the method. Therefore, the complete digital representation of any analog signal is currently available for further use.

In the practice of this analog to digital conversion method, an electrical scale is generated having a number of n steps for

evaluating amplitudes of analog signals. The amplitudes are measured by comparison to the electrical scale. At any time during measurement, a signal indicates the highest step of the scale being exceeded.

An analog to digital converter circuit hereof has at least $n-1$ pairs of diodes which are connected in parallel with opposed



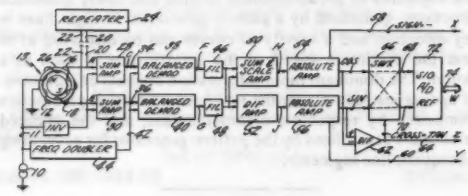
polarity. A calibrated constant current is fed to each pair of diodes for generating a stepped electrical scale. At least one electronic switch is included for each step of the scale which is responsive to the potential difference between the terminals of a diode pair and which controls the digital representative of measured values.

3,735,391

MAGNETIC SYNCHRO ANGLE RESOLVER

John E. Games, Granby, and Clarence Casper, Jr., Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 5, 1971, Ser. No. 169,387
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **8 Claims**



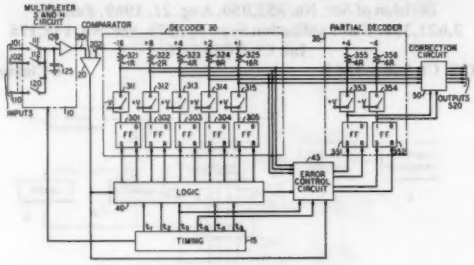
A magnetic synchro second harmonic generator has line voltage bucked out in current summing means, and is synchronously rectified in balanced demodulators utilizing double the line frequency as a reference. Filtering removes remaining odd harmonics, and functions of the sum and difference of the two filtered outputs provide signals comprising quadrature related sine and cosine functions of the desired rotor angle. By sensing the sign of the quadrature components, and which of them has a greater absolute magnitude, all eight octants of a circle can be identified; within each octant, a digital word representing the tangent or cotangent (chosen so that either is always less than one, when used) together with the sign and magnitude bits comprise a complete digital resolution of the angle. The tangent and cotangent are derived by applying the sine and cosine to correct related ones of the signal and reference inputs of an analog to digital converter, to take ratios thereof.

3,735,392

BIPOLAR ANALOG-TO-DIGITAL CONVERTER WITH DOUBLE DETECTION OF THE SIGN BIT

Hisashi Kaneko, Tokyo, Japan, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 8, 1971, Ser. No. 205,793
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **8 Claims**



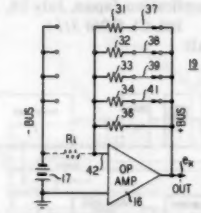
A bipolar sequential analog-to-digital converter is designed to have two sign bit checks. When the first few encoded bits indicate an input signal near zero, the sign bit is rechecked and the result is compared with the first sign bit detection. When the two are the same, the encoder continues to generate the remaining bits of the code. However, when the sign bits do not match, the previously generated bits are corrected before the encoder generates the remaining bits.

3,735,393

SELF COMPANDING PULSE CODE MODULATION SYSTEMS

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation of Ser. No. 879,661, Nov. 25, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 200,781
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **6 Claims**



A self companding analog digital system produces a desired compression expansion curve by switching the gain ratio of an operational amplifier in accordance with a binary code.

3,735,394

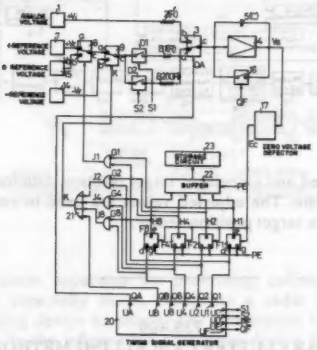
INTEGRATING A-D CONVERSION SYSTEM

Tetutaro Eto, No. 841-2 chome Soshigoya, Setagaya-ku, Tokyo, Japan

Filed Oct. 27, 1970, Ser. No. 84,399
Claims priority, application Japan, Oct. 30, 1969, 44/86638
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **5 Claims**

An integrating A–D conversion system which is adapted to provide an analog input voltage in the form of a binary-coded decimal digital output indicated by a code 8–4–2–1 and comprises the steps of (1) positively integrating a positive analog input voltage for a period of time 2T, (2) subtracting from the

resulting voltage $-V_r$ in (1) a voltage produced by integrating a negative reference voltage for a period of time T, (3) adding the resulting voltage in (2) with a negative (or positive) voltage produced by integrating the voltage $-V_r$(or $+V_r$) for a period of time T/2 according as the resulting voltage in (2) is positive (or negative), (4) adding the resulting voltage in (3) with a negative (or positive) voltage produced by integrating the voltage $-V_r$(or $+V_r$) for a period of time T/4 according as the resulting voltage in (3) is positive (or negative), (5) adding the resulting voltage in (4) with a negative (or positive) voltage produced by integrating the voltage $-V_r$(or $+V_r$) for



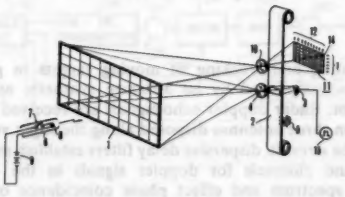
a period of time T/8 according as the resulting voltage in (4) is positive (or negative), (6) adding the resulting voltage in (5) with a negative (or positive) voltage produced by integrating the voltage $-V_r$(or $+V_r$) for a period of time T/8 according as the resulting voltage in (5) is positive (or negative), (7) obtaining a digital output representing the first digit of a binary-coded decimal number in the form of a four-bit code of "1" and "0" according as each of the resulting voltages in (2), (3), (4) and (5) is positive or negative, and (8) thereafter repeating the same operations as in (2) to (7) to obtain digital outputs representing a second, third, . . . digits in the form of binary-coded decimal numbers.

3,735,395

PROJECTION TYPE KEYBOARD DEVICE

Yasuo Iwabuchi, Hino City, Tokyo, and Tomonori Yoshioka, Kokubunji City, Tokyo, both of Japan, assignors to Iwatsu Electric Company, Limited, Tokyo, Japan

Filed Jan. 4, 1971, Ser. No. 103,680
Int. Cl. G08b 5/36
U.S. Cl. 340—365 P **4 Claims**



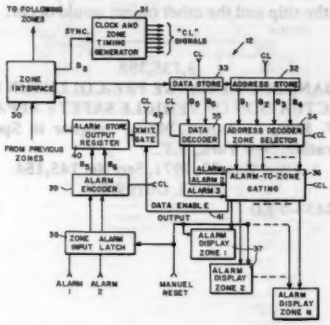
In a projection type keyboard device of the type wherein desired information is selected by means of a light pen on a keyboard upon which the information of the desired letter, digit, symbol and the like are selectively projected, the light for projecting the desired information and the light of the light pen are prevented from occuring simultaneously.

3,735,396

ALARM SIGNALLING NETWORK

Edward H. Getchell, Lexington, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed Aug. 10, 1971, Ser. No. 170,558
Int. Cl. G08b 29/00
U.S. Cl. 340—413 **24 Claims**



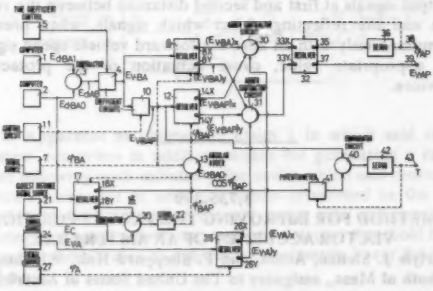
An alarm signalling network which monitors the alarm status of a plurality of separate zones under surveillance. A control station supplies a composite signal for transmission to a receptor station at each of the zones, which signal includes interrogation portions to which the receptor stations respond. Each receptor station thereupon produces an alarm status signal, which are included as alarm status signal portions of the composite signal. The composite signal is transmitted via a common transmission link between the control station and receptor stations, at least one of the receptor stations having means for displaying the alarm status from one or more of the other receptor stations, and the operations of the control and receptor stations are appropriately synchronized.

3,735,397

A SPEED HEATING AND/OR TIME SIGNAL GENERATING SYSTEM FOR A SHIP

Tomiji Nirasawa, No. 660-2, Miyazawa-cho, Totsuka-ku, Yokohama, Japan

Filed July 13, 1970, Ser. No. 54,313
Claims priority, application Japan, July 15, 1969, 44/55574
Int. Cl. G01s 9/48, 9/04
U.S. Cl. 343—5 ST **16 Claims**



A speed, heading and time signal generating system for a ship comprising means for producing a speed signal for controlling the speed of the ship, means for producing a heading signal for controlling the heading of the ship, such that when the ship is in danger of a collision with other objects, a collison is avoided This is accomplished by setting into the system a signal representative of the distance of the closest point of approach between the ship and the other object as well as speed

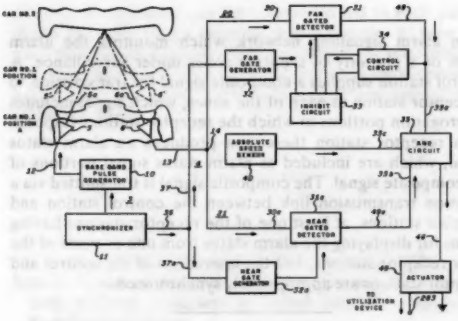
and bearing signals. Additional signals representative of the relative distance between the ship and the other object and representative of the relative head bearing between the ship and the other object, and also a signal representative of the relative distance between the ship and the other object at a predetermined past time are utilized. The system further comprises means for producing a time signal representative of the time at which the distance of the closest point of approach between the ship and the other object would occur.

3,735,398

BASE BAND SHORT RANGE PRE-COLLISION SENSOR FOR ACTUATION OF VEHICLE SAFETY APPARATUS

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 20, 1971, Ser. No. 145,154
Int. Cl. G01s 9/04
U.S. Cl. 343—7 ED **23 Claims**



A vehicle safety apparatus includes a radio means for the detection of an impending collision immediately prior to contact of the vehicle with another object and for actuation of restraining or other safety devices for protecting occupants of the vehicle when the crash event actually occurs. Base-band radio pulse transmission and reception devices with first and second echo signal range gating channels provide distinctive output signals at first and second distances between the vehicle and the reflecting object which signals, when present simultaneously with an absolute forward vehicle speed signal of appropriate value, cause actuation of the protective devices.

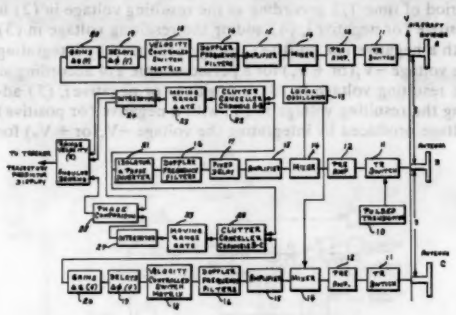
3,735,399

METHOD FOR IMPROVING THE TARGET POSITION VECTOR ACCURACY OF AN AMTI RADAR

Carlyle J. Sletten, Acton, and F. Sheppard Holt, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,581
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **1 Claim**

Target bearing angle accuracy is improved through increased time on target followed by processing including averaging and synthetic aperture techniques. The course target position vector provided by an AMTI interferometer type radar is analytically extended to its point of minimum range. The target range, bearing, and velocity values for the point are adjusted to incorporate a minimized error function derived



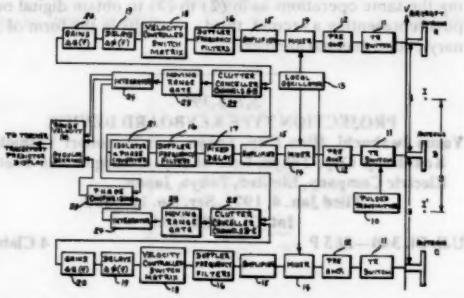
from measured and calculated target position data for a given interval of time. The adjusted values are used to establish a more accurate target position vector.

3,735,400

AMTI RADAR CLUTTER CANCELLING METHOD AND APPARATUS

Carlyle J. Sletten, Acton, and F. Sheppard Holt, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,582
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **8 Claims**

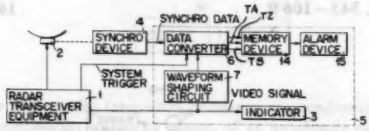


The locating and tracking of moving targets in ground clutter is accomplished by an airborne synthetic aperture radar system. Radar doppler echo signals are received simultaneously on three antennas disposed along the flight velocity vector of the aircraft. dispersive delay filters establish multiple narrow band channels for doppler signals in the clutter frequency spectrum and effect phase coincidence of such signals in each antenna. Clutter cancellation is accomplished by phase inverting the output of the center antenna and summing the outputs of adjacent antennas. Effective antenna gain and signal directivity on moving targets are increased by integrating many echoes following each filter. The doppler filters of the system are linked to the delay lines with an aircraft velocity dependent switch and gain adjusting means are provided for each antenna.

3,735,401
ALARM APPARATUS FOR PREVENTING COLLISION OF MOVING BODIES

Nozomu Sakano, Tokyo; Tsuneo Yamanaka, Yokohama; Kumekichi Shibagaki, and Katsumi Kawabe, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, and Ishikawajima-Harima Heavy Industries Co., Ltd., Chiyoda-ku, Tokyo, both of Japan

Continuation-in-part of Ser. No. 810,166, March 25, 1969, abandoned. This application July 27, 1970, Ser. No. 58,470
Claims priority, application Japan, Mar. 30, 1968, 43/20684
Int. Cl. G01s 9/02
U.S. Cl. 343—11 R 6 Claims

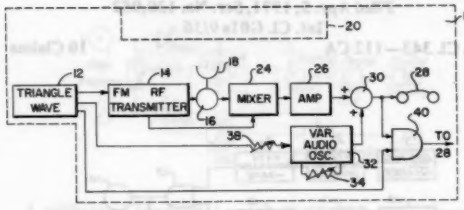


An alarm apparatus for preventing collision of moving bodies, especially shops, comprises a radar system and a processing device to process the information from the radar system. In the information processing device the field of the radar is divided into a plurality of unit areas, the information for each unit area is stored in a corresponding digital or analog memory device and the information stored therein is read out at predetermined sequential times to provide information regarding the possibility of occurrence of a collision of the moving bodies.

3,735,402
PORTABLE RADAR SYSTEM

Richard K. Mosher, Sudbury, Mass., assignor to Kimball Products Company, Inc., Sudbury, Mass.

Filed Mar. 4, 1971, Ser. No. 120,928
Int. Cl. G01s 9/24
U.S. Cl. 343—14 13 Claims

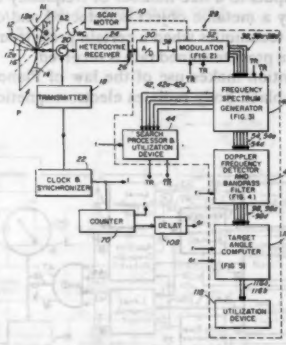


A portable, direct distance readout, FM-CW radar especially adapted for small craft use in which relative target distance is measured independent of Doppler effects produced by relative target velocity. An indication may be provided of whether the relative target distance is opening or closing. The invention also includes compensation for modulation nonlinearity errors in the final readout.

3,735,403
TRACKING RADAR

David F. Sykes, Lincoln, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 2, 1971, Ser. No. 168,245
Int. Cl. G01s 3/56, 9/52
U.S. Cl. 343—16 R 6 Claims

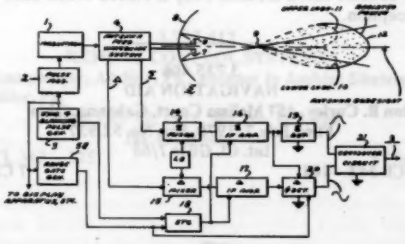


A conical scan signal receiver using digital computation apparatus for calculating angle tracking data is disclosed. The angle tracking data of a selected target are digitally calculated by determining the relative level of target related energy between an "up" elevation channel, a "down" elevation channel, a "right" azimuthal channel and a "left" azimuthal channel.

3,735,404
CROSSOVER CIRCUIT FOR MONOPULSE RADAR

Edward C. Schwartz, Cheektowaga, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 7, 1965, Ser. No. 462,143
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M 2 Claims



2. Apparatus as claimed in claim 1 in which said radar system comprises in addition means for generating a range gate following each radiated pulse and in which said crossover circuit comprises in addition means connected to the last name detector, controlled by said range gate and operative during said range gate to increase said detector threshold from a preset initial value as a direct approximately linear function of range.

3,735,405
PASSIVE RADIOMETRIC DETECTION SYSTEM

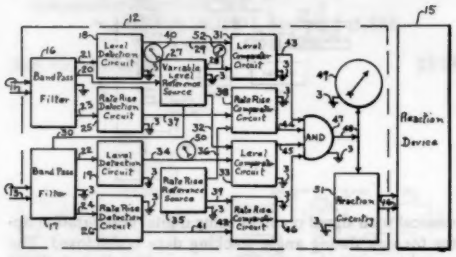
Ib Anthon Berg, 7964 Bolling Drive, Alexandria, Va.

Filed Jan. 10, 1972, Ser. No. 216,491
Int. Cl. G01j 5/10
U.S. Cl. 343—100 ME 5 Claims

This invention relates to a system for detecting metallic objects above the earth, and more particularly, to a system of

passive directional receiving antennas aimed toward the sky for receiving electromagnetic energy radiated from the earth and reflected from the surfaces of metallic objects within the cones of reception of the antennas. This system makes use of passive receiving antennas discretely arrayed for receiving radiation in the microwave region of the electromagnetic radiation spectrum. The radiation signals received by each antenna are inputs to a like number of frequency band pass filters whereby a metallic object is detected and/or located by radiometric techniques when a certain predetermined level of radiation at a predetermined rate is received.

This invention makes use of the law of Planck which sets forth that a black body radiates electromagnetic radiation at



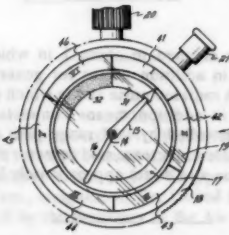
all frequencies as a function of the absolute temperature of the body. Therefore, the earth which approximates a black body, radiates electromagnetic radiation as a function of its surface temperature, approximately 300° Kelvin. When the electromagnetic energy radiated from the earth is reflected from a metallic body above the earth into the cone of reception of an antenna directed toward the sky, there will be an increase in the received radiation toward the 300° Kelvin. A continuing background "noise" radiation is received from the outer sky as a result of the sky's radiometric temperature, approximately 30° Kelvin. The increase toward 300° Kelvin at a rate indicative of the speed of entry of the metallic object into the cone denotes that a metallic body is indeed within such cone of reception.

3,735,406

NAVIGATION AID

Morton B. Curley, 457 Melissa Court, Gahanna, Ohio

Filed July 7, 1970, Ser. No. 52,937
Int. Cl. G01s *1/68*
U.S. Cl. 343—101 **7 Claims**



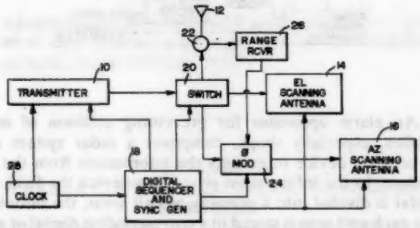
A device for systematic and continuous identification of radio beacon transmissions used in navigation by reference to the relationship of a pointer to indicia on the bezel of the apparatus. The indicia on the bezel correspond to the number of sequentially transmitting beacons and the bezel is rotatable to allow synchronization. When a beacon transmission is identified, the bezel is rotated such that the indicia corresponding to the next beacon in the sequence is aligned with the reference position on the device. When the beacon terminates transmission, the device is started, causing the pointer to rotate such that the successive beacons transmission can be identified by observing the position of the pointer relative to the indicia.

3,735,407

STEPPED BEAM INSTRUMENT LANDING SYSTEM

Maurice A. Meyer, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 3, 1970, Ser. No. 25,393
Int. Cl. G01s *1/54*
U.S. Cl. 343—106 R **16 Claims**



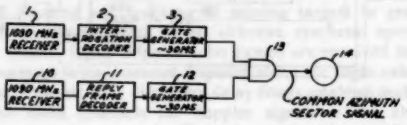
A signal processing system for use in an instrument landing system and operative to continuously measure aircraft position from stepped antenna patterns. Time sequential spatially stepped overlapping antenna beams are generated in the azimuth and elevation planes, and logic circuitry provided for measuring the power spectra of adjacent stepped antenna beams and for deriving precise and continuous position information therefrom.

3,735,408

COMMON AZIMUTH SECTOR INDICATING SYSTEM

George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Filed Apr. 5, 1971, Ser. No. 130,952
Int. Cl. G01s *9/56*
U.S. Cl. 343—112 CA **10 Claims**

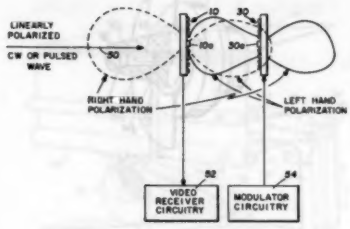


A proximity warning system for aircraft, using only the signals emitted by secondary surveillance radar and cooperating transponder equipped aircraft, to indicate presence of an intruder in a defined common azimuth sector which is wider than the radar beam, and to provide range information regarding such an intruder based on a side lobe suppression signal transmitted by the radar.

3,735,409
ELECTROMAGNETIC WAVE RECEIVER

David N. Gershberg, Rockville, Md., and Alex Y. Lee, Arlington, Va., assignors to E-Systems, Inc., Dallas, Tex.

Filed Feb. 22, 1972, Ser. No. 228,193
Int. Cl. G01s 5/02
U.S. Cl. 343—113 R 16 Claims

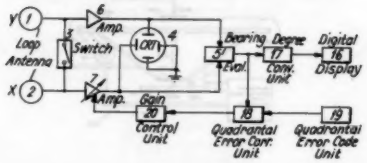


Video pulse radio frequency receivers are rendered sensitive to continuous waves by means of an amplitude modulation technique involving coupling between circularly polarized antennas. The circularly polarized antennas incorporate semiconductor diodes as an integral part of the antenna structure. Two circularly polarized antennas with diodes incorporated therein are mounted in tandem with counter rotating faces directed toward a source of linearly polarized electromagnetic wave. One circularly polarized component of the electromagnetic wave excites the first antenna, while the counter rotating component passes through the first antenna and excites the second antenna. The integral diode of the antennas acts respectively as a detector and modulator, with radio frequency coupling being provided by the tandem arrangement which locates the antenna faces of like polarization sense adjacent each other. By arranging a multiple of the pairs of tandem mounted antennas in a distributed pattern, direction finding capabilities are provided.

3,735,410
DIRECTION FINDER GAIN CALIBRATION UPDATING SYSTEM

Dag Poppe, 1346 Gjettum, and Odd Mathiesen, Oslo 5, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,531
Int. Cl. G01s 3/10
U.S. Cl. 343—114 6 Claims

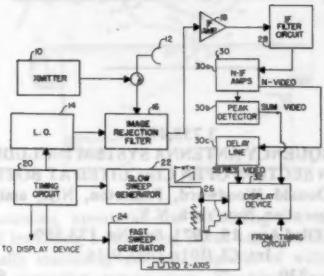


A calibration (updating) system for dual channel direction finders having two receiver channels associated with a corresponding pair of loop antennas. A cathode ray tube having orthogonal deflection elements is connected to present the two receiver channel outputs as an index line at the bearing angle. Means are included for calibrating the gain and phase characteristics of the channels automatically. A signal evaluation circuit employing self-adjusting feedback arrangement automatically injects a bearing offset during the gain and phase calibration (updating) process to correct for quadrantal errors.

3,735,411
HIGH-RANGE RESOLUTION RADAR REAL-TIME DISPLAY APPARATUS

Richard G. Whitnah, Bremerton, Wash., and Abe Goldstein, Santa Ana, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 11, 1971, Ser. No. 170,688
Int. Cl. G01s 9/02, 9/12
U.S. Cl. 343—17.2 R 5 Claims

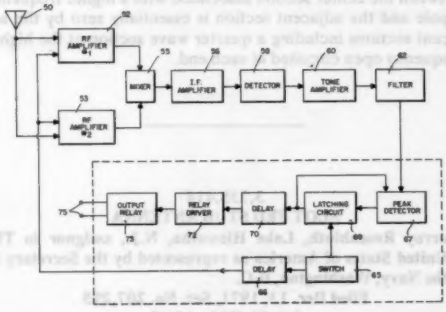


A high-range resolution radar display apparatus for generating a composite coarse and fine real-time radar display simultaneously without an intermediate storage system. One display comprises an extended length display which allows an operator to search an extended delta range and is generated by peak detecting range information from narrow bandwidth IF filters. The other display is a limited extent display featuring the maximum resolution capability of the correlation radar system for detailed target examination and is generated by feeding the information from each of the IF filters to common delay line circuitry for making the information, which represents contiguous range samples, contiguous in time.

3,735,412
REMOTE CONTROL SYSTEMS

Roy Kampmeyer, Ambler, Pa., assignor to Ambler Electronics, Ambler, Pa.

Filed July 13, 1971, Ser. No. 162,094
Int. Cl. H04b 7/00
U.S. Cl. 343—225 8 Claims



A mechanically actuated, radio frequency transmitter capable of providing radio frequency transmissions, without the

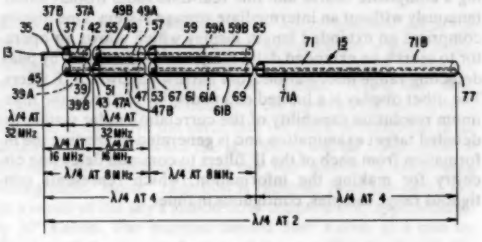
need of stored electrical energy or external electrical energy, for utilization in remote control systems, consisting of an AC generator comprising a mechanically actuated rotor which is caused to rotate in close proximity to a stator assembly by rack and pinion means thereby resulting in induced electrical energy in the form of a sine wave; a tone generator; radio frequency oscillator means; and a single antenna for transmitting at least one signal generated by the radio frequency oscillator means. A receiver system eliminates the necessity for conventional oscillator by combining signals received from the transmitter, producing an intermediate frequency signal and demodulating the resulting signal by tone amplifier and filter means.

3,735,413

MULTIFREQUENCY ANTENNA SYSTEM INCLUDING AN ISOLATION SECTION OPEN CIRCUITED AT BOTH ENDS

Oakley McDonald Woodward, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,109
Int. Cl. H01q 1/00, 9/16
U.S. Cl. 343—730 **6 Claims**



A multifrequency antenna system including a center fed dipole element one-half wavelength long at the lowest frequency of operation is described. This dipole element has circuit elements at appropriate positions along the element on each side of the center feed such that the center section of the dipole is effectively "cut" to form higher frequency dipoles one-half wavelength long at the higher harmonic frequencies of the lowest frequency of operation. Mutual coupling between the center section associated with a higher frequency dipole and the adjacent section is essentially zero by the adjacent sections including a quarter wave section at the higher frequency open circuited at each end.

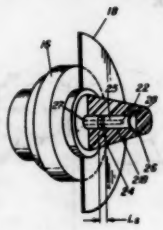
3,735,414

SLOT FED STUB ANTENNA

Murray Rosenbluth, Lake Hiawatha, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1971, Ser. No. 207,295
Int. Cl. H01q 13/12
U.S. Cl. 343—769 **3 Claims**

A slot fed stub antenna comprising a ground plane and a cable geometrically centered and normally aligned with said ground plane, having one end in abutment with said ground plane, wherein said cable comprises an elongated hollow



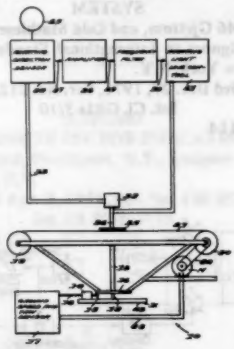
member, dielectrically supported, having a circumferentially slotted cross section and a wire axially centered within said hollow member.

3,735,415

EMITTER LOCATION MAPPING DEVICE

Dwin R. Craig, Gaithersburg, Md., assignor to Ingenuics, Inc., Gaithersburg, Md.

Filed Jan. 9, 1970, Ser. No. 1,639
Int. Cl. G01d 9/42
U.S. Cl. 346—33 B **5 Claims**



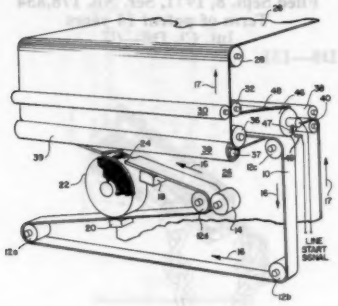
An emitter location mapping device in which a vehicle mounted rotating direction finding sensor of emitter radiations is actuated by the emitter radiation to supply trigger pulses to a sychronously rotated line source of light which underexposes film that is moved past the exposing head at a rate proportional to ground speed. The intersection of a plurality of underexposures for each emitter location produces a localized exposure on the film at the location of the radiation emitter. The ratio of film speed to ground speed determines the scale of the resulting map.

3,735,416

MAGNETIC PRINTING SYSTEM

Owen J. Ott, Brookfield, and David W. Ginn, Newton, both of Conn., assignors to Data Interface Associates, Brookfield, Conn.

Filed Apr. 30, 1971, Ser. No. 138,924
Int. Cl. G03g 19/00; H04n 1/28
U.S. Cl. 346—74 MP 30 Claims



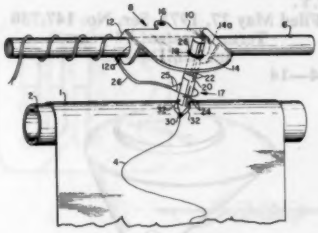
A high speed non-impact printing system in which data to be printed is recorded on a magnetic tape as an array of elements to which a magnetic toner is applied and subsequently transferred onto an associated page. The system can be employed to print alphanumeric characters, symbols and the like, as well as pictorial or graphical information, and individual characters or entire lines can be printed during a print cycle.

3,735,417

TEMPERATURE REGULATING HEAT-RECORDING STYLUS

Emil A. Holzhauser, Fort Washington, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 26, 1971, Ser. No. 192,391
Int. Cl. G01d 15/10
U.S. Cl. 346—139 C 8 Claims

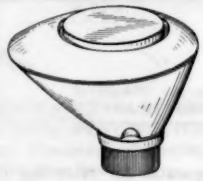


A recording apparatus for recording on heat-sensitive material including a recording stylus having a mandrel of an electrically insulating material capable of withstanding an elevated recording temperature. Electrical conductors are deposited on the surface of the mandrel to electrically connect a source of electrical power to a themister forming a characterized recording end of the mandrel and having a positive temperature coefficient of resistance. The mandrel is attached to a stylus support arranged to be selectively driven across a recording material with the electrical conductors being electrically isolated from the stylus support.

DESIGNS

MAY 22, 1973

226,941
ELECTRIC SKIN HYGIENE BRUSH
John L. Benty, Scotch Plains, N.J., and Dominic Defano, Palatine, Ill., assignors to Clairol Incorporated, New York, N.Y.
Filed May 27, 1971, Ser. No. 147,730
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—14



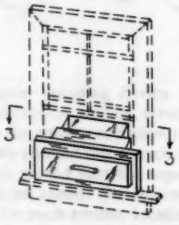
226,942
TOOTH BRUSH
Sakuji Okuda, 42–3, 1-chome Sugamo, Toshima-ku, Tokyo, Japan
Filed May 11, 1971, Ser. No. 142,430
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

226,943
CLOTHES HANGER
Tom Erik Torbjorn Ahlström and Hans Otto Georg Ehrich, both of 13 Brannkyrkagatan, S–117 20 Stockholm, Sweden
Filed Aug. 11, 1971, Ser. No. 171,041
Claims priority, application Sweden May 6, 1971
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—248

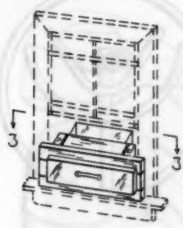
226,944
DOOR CHAIN LOCK
Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sept. 8, 1971, Ser. No. 178,854
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131

226,945
COMBINED CAN CLOSURE AND POURING SPOUT
Albert E. Burkhardt, 5 Sunnyfield, Rolling Hills Estates, Calif. 90274
Filed Aug. 23, 1971, Ser. No. 174,284
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—275

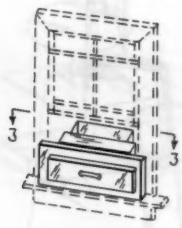
226,946
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,243
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



226,947
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,244
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



226,948
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,245
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



226,949
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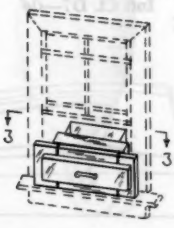
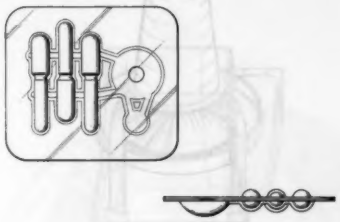
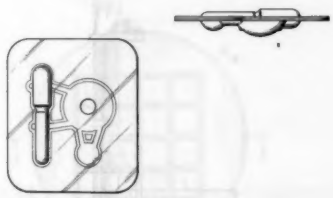
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,246
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



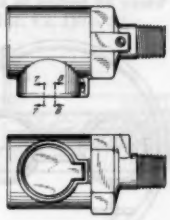
226,950
DETECTOR FOR BLOOD ANALYSIS
James J. Sirago, 910 Enterprise, Inglewood, Calif. 90302, and Edward B. Walton, 3129 Yale Ave., Marina Del Rey, Calif. 90291
Filed Aug. 27, 1971, Ser. No. 175,796
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D16—1 R



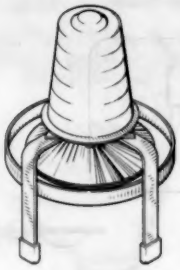
226,951
DETECTOR FOR BLOOD ANALYSIS
James J. Sirago, 910 Enterprise, Inglewood, Calif. 90302, and Edward B. Walton, 3129 Yale Ave., Marina Del Rey, Calif. 90291
Filed Aug. 27, 1971, Ser. No. 175,795
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2 B



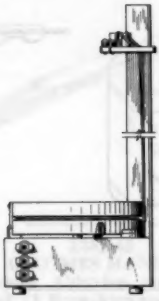
226,952
PRESSURE RELIEF VALVE
Frederick J. Brindisi, Rochester, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.
Filed July 23, 1971, Ser. No. 165,869
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



226,953
HUMIDIFIER
Robert T. Martin, 1708 East 4800 South, Salt Lake City, Utah 84117
Filed Sept. 2, 1971, Ser. No. 177,541
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—146



226,954
TEACHING AID FOR MEASURING THE ACCELERATION OF A FALLING BODY
Roger D. Stephenson, Overland Park, Kans., assignor to Physics Apparatus Research, Inc., Overland Park, Kans.
Filed Aug. 16, 1971, Ser. No. 172,372
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

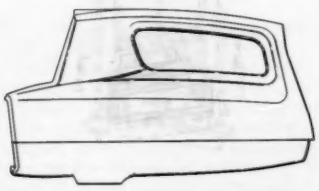


226,955
MEDALLION
Elaine J. Papavasiliou, Shoreham, N.Y., assignor to Symbologics, Inc., Port Jefferson, N.Y.
Filed July 21, 1971, Ser. No. 164,963
Term of patent 3½ years
Int. Cl. D11—*03*
U.S. Cl. D29—19

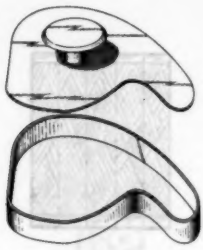
226,956
MEDALLION
Elaine J. Papavasiliou, Shoreham, N.Y., assignor to Symbologics, Inc., Port Jefferson, N.Y.
Filed July 21, 1971, Ser. No. 164,965
Term of patent 3½ years
Int. Cl. D11—*03*
U.S. Cl. D29—19

226,957
TOY TRACKWAY
Toshikatsu Arai, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Aug. 20, 1971, Ser. No. 173,713
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM

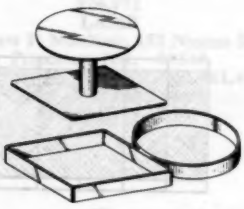
226,958
ELECTRIC MIXER HOUSING
Gordon W. Florian, Fairfield, Conn., assignor to General Signal Corporation, Rochester, N.Y.
Filed May 17, 1971, Ser. No. 144,389
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1 C



226,959
FOOD MOLD
Michael J. Pasquale, 115 Grove St., Middletown, Conn. 06457
Filed July 21, 1971, Ser. No. 164,969
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1 L



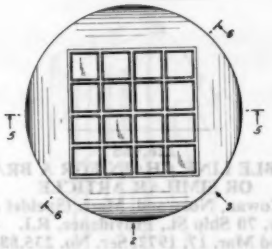
226,960
FOOD MOLD
Michael J. Pasquale, 115 Grove St., Middletown, Conn. 06457
Filed July 21, 1971, Ser. No. 164,975
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1 L



226,961
DRINKING CUP
Lyle E. King, R.R. 1, Homer, Ill. 61849
Filed June 24, 1971, Ser. No. 156,589
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 B

226,962
CUP
Albert W. Krock, Fremont, Ohio, assignor to The Scott & Fetzer Company
Filed Dec. 16, 1971, Ser. No. 209,012
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 A

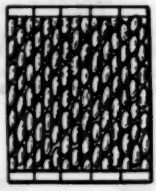
226,963
COASTER
Nicholas P. Angelakos, Brooklyn, N.Y., assignor to Lancaster Colony Corporation
Filed Sept. 15, 1971, Ser. No. 180,941
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10 D



226,964
DISH
Robert W. Schier, Glenview, Ill., assignor to Design Dynamics, Inc., Northfield, Ill.
Filed Dec. 23, 1971, Ser. No. 211,836
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 A

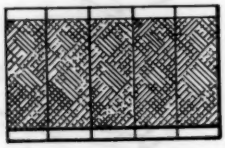
226,965
PLATE OR SIMILAR ARTICLE
Johanna Grams, Bremen, Germany, assignor to Porzellan-Handels-G.m.b.H., Berlin, Germany
Filed July 27, 1971, Ser. No. 166,653
Claims priority, application Germany Feb. 1, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 J

226,966
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass. (Speidel A Textron Company, 70 Ship St., Providence, R.I. 02903)
Filed Mar. 17, 1972, Ser. No. 235,881
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 E



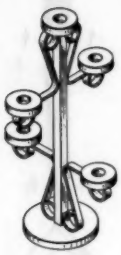
226,967
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Raymond C. Fontaine, Greenville, R.I., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 17, 1972, Ser. No. 235,883
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 E

226,968
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron, Inc., Providence, R.I.
Filed July 3, 1972, Ser. No. 268,886
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 E



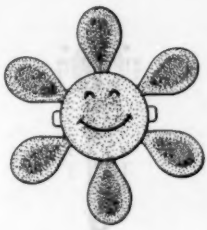
226,969
CROSS PENDANT OR THE LIKE
Jeneane M. Quigley, Waterloo, Iowa, assignor to The Witness Cross, Waterloo, Iowa
Filed Mar. 20, 1972, Ser. No. 236,578
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B

226,970
CANDLE HOLDER
James D. Boyd, 3231 Washington Ave., St. Joseph, Mich. 49085
Filed July 19, 1972, Ser. No. 273,180
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2

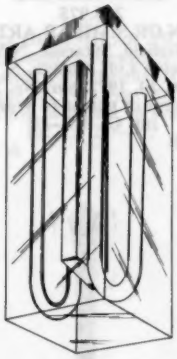


226,971
LAMP
Andrew P. MacNair, 152 Nassau St., Princeton, N.J. 08540
Filed July 12, 1971, Ser. No. 161,413
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A

226,972
NIGHT LIGHT
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Feb. 17, 1972, Ser. No. 227,321
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



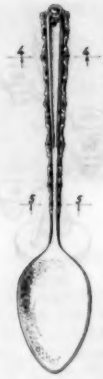
226,973
CEILING MOUNTED FLUORESCENT LIGHT FIXTURE
Ernest Monte, Pasadena, Calif., assignor to Sunbeam Lighting Co., Los Angeles, Calif.
Filed June 24, 1971, Ser. No. 156,213
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A



226,974
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jan. 14, 1972, Ser. No. 218,051
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 R

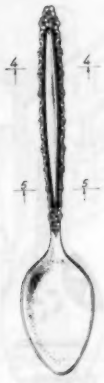
226,975
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,559
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 R

226,976
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Feb. 24, 1972, Ser. No. 229,249
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A



226,977
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 19, 1972, Ser. No. 255,318
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 R

226,978
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 24, 1972, Ser. No. 256,631
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A



226,979
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 24, 1972, Ser. No. 256,631
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A

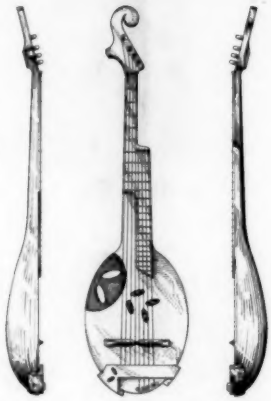
226,980
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed June 12, 1972, Ser. No. 262,125
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A

226,981
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed June 15, 1972, Ser. No. 263,189
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A

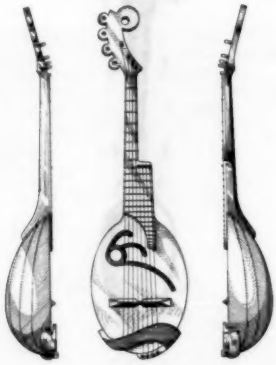
226,982
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 27, 1972, Ser. No. 275,691
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A

226,983
COMBINED CYMBAL MOUNT AND MUFFLER OR SIMILAR ARTICLE
Robert M. Grauso, Bayside, and John J. Morena, Levittown, N.Y., assignors to C. F. Martin & Co., Nazareth, Pa.
Filed Apr. 30, 1971, Ser. No. 139,309
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E

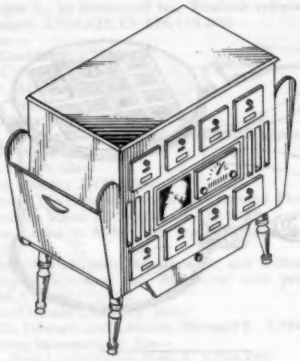
226,984
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Sept. 20, 1971, Ser. No. 182,283
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



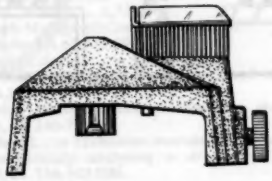
226,985
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Sept. 20, 1971, Ser. No. 182,284
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



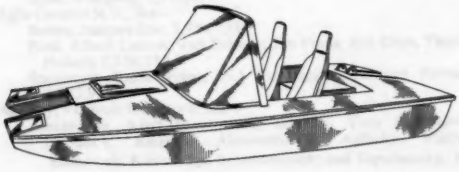
226,986
COMBINED RADIO, CHEST AND MAGAZINE RACK OR SIMILAR ARTICLE
Angelo J. Ladatta, 3719 Summer St., Shreveport, La. 71109
Filed Apr. 23, 1971, Ser. No. 137,094
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 C



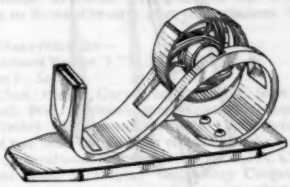
226,987
ELECTRONIC FLASH ADAPTER FOR CAMERAS
Keisuke Kitagawa, Tokyo, Japan, assignor to Kalimar, Inc., St. Louis, Mo.
Filed June 25, 1971, Ser. No. 157,079
Term of patent 7 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



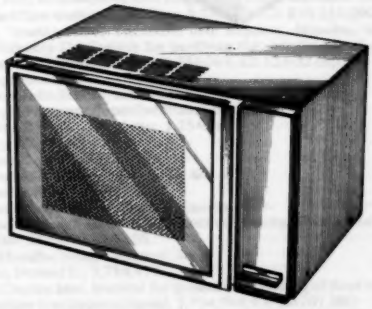
226,988
WATER VEHICLE
Robert V. Albertson, Wayzata, Minn., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed July 12, 1971, Ser. No. 161,383
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q



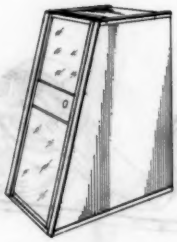
226,989
ADHESIVE TAPE DISPENSER OR THE LIKE
Tatsuo Kikuchi and Takashi Toyama, Tokyo, Japan, assignors to Nichiban Co., Ltd., Tokyo, Japan
Filed July 30, 1971, Ser. No. 167,885
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 B



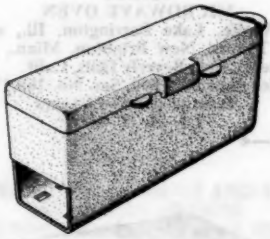
226,990
MICROWAVE OVEN
Donald G. Wolfe, Lake Barrington, Ill., and William Raymond Tapper, New Brighton, Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed June 26, 1972, Ser. No. 266,118
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



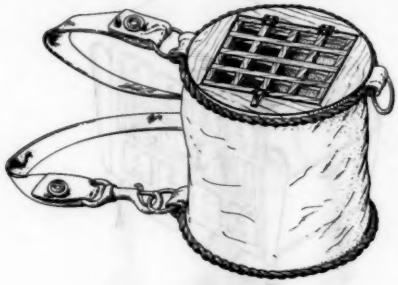
226,991
MOBILE HOUSING FOR CONDUCTING HEARING TESTS
Carl-Axel Tegner, Majorsgatan 17, Stockholm, Sweden
Filed July 29, 1971, Ser. No. 167,563
Claims priority, application Sweden Feb. 12, 1971
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



226,992
TOOTHBRUSH CONTAINER
Roy G. Bridges, 641 S. 4th Ave., Los Angeles, Calif. 91746
Filed June 24, 1971, Ser. No. 156,577
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



226,993
HANDBAG
Arthur J. Fox, Edgewater Drive, Rte. 2, Box 234B, Edgewater, Md. 21037
Filed Oct. 13, 1971, Ser. No. 189,075
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



226,994
COMBINED FLUID DISPENSER AND CABINET THEREFOR
Donald W. Bradley, 5625 Winston Drive, Indianapolis, Ind. 46226
Filed Nov. 4, 1971, Ser. No. 195,894
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D94—3 B

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22D DAY OF MAY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aagard, Roger L., to Honeywell Inc. Readout system for a magnetsoptic memory. 3,734,625, Cl. 356-118.000.

AB Tico: *See—*
Frisk, Knut Olov, 3,734,319.

Aba-Geigy Corporation: *See—*
Dexter, Martin, 3,734,926.

Abbey, Inc.: *See—*
Abramowitz, Lorne, 3,733,614.

Abernathy, William D. Wall frame construction apparatus. 3,734,376, Cl. 227-111.000.

Abex Corporation: *See—*
Kubilos, Charles, 3,733,963.

Abos, Ramon L., to Hoad Engineers Incorporated. Process for disposal of combustible waste. 3,734,036, Cl. 110-8.00r.

Abramowitz, Lorne, to Abbey, Inc. Open collar nectie. 3,733,614, Cl. 2-144.000.

Abrams, Harold B.; Haynes, Benjamin O.; and Williams, Glynn P., to Myles Digital Sciences, Inc. Electronic data processing system. 3,735,366, Cl. 340-172.500.

Ace Tank and Heater Company: *See—*
Cancilla, Edward; and Lanahan, Bernard E., 3,734,064.

ACF Industries Incorporated: *See—*
Natho, Paul J.; and Vicari, Felix J., 3,734,455.

Acuna, Cristoban Manuel. Electrical memorandum. 3,735,386, Cl. 340-323.000.

Adachi, Tadaaki: *See—*
Yasui, Yukio; Ikoga, Wataru; Mori, Akihiko; and Adachi, Tadaaki, 3,734,746.

Adamovske Strojirny, narodni podnik: *See—*
Jiruse, Jaroslav, 3,734,016.

Adams, Houston L.: *See—*
Hughes, Robert T.; and Adams, Houston L., 3,734,551.

Adams, James P.S.: *See—*
Batistelli, Nello; and Adams, James P.S., 3,734,357.

Adams, John, to Brown, S. G., Limited. Recoverable shock mounts. 3,734,483, Cl. 267-65.000.

Adams, Thomas Burton, Jr.: *See—*
Tsuchiya, William Sadayuki; and Adams, Thomas Burton, Jr., 3,734,199.

Adams-Russell Co., Inc.: *See—*
Patterson, William L., 3,734,342.

Addressograph-Multigraph Corporation: *See—*
Dunn, Robert A., 3,735,094.

Adickes, Cecil F.: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,734,125.

Adler, Charles, Jr. Streamlined gas discharge anticollision beacon. 3,735,115, Cl. 240-7.700.

Adler, Stanford L., to Technicon Instruments Corporation. Apparatus for photometrically analyzing a droplet of a sample liquid. 3,734,622, Cl. 356-103.000.

AEG-Elotherm GmbH: *See—*
Von Starck, Axel; and Pawlek, Franz, 3,734,720.

Aerojet-General Corporation: *See—*
Miller, Howard F., 3,734,310.

Afga-Gevaert Aktiengesellschaft: *See—*
Szostak, Noland; Hartwig, Karl; and Maurischat, Gunter, 3,734,604.

Agarwal, Paul D.; Johnston, Richard W.; and Neuman, John G., to General Motors Corporation. Vehicle operation inhibitor control system. 3,735,207, Cl. 317-134.000.

Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, 3,735,373.

Agfa-Gevaert Aktiengesellschaft: *See—*
Knapp, Walter; Weinert, Volker; and Ramsauer, Kurt, 3,734,611.
Wick, Richard; Winkler, Alfred; and Von Fischern, Bernhard, 3,733,989.
Zahn, Wolfgang, 3,734,614.

Agfa-Gevaert N.V.: *See—*
Bories, Jacques Elie, 3,734,735.
Poot, Albert Lucien; Van Besauw, Jan Frans; and Ghys, Theofiel Hubert, 3,734,733.
Stievenart, Emile Frans; and Verbruggen, Herman Fernand, 3,733,992.

Aglitsky, Vladimir Efimovich: *See—*
Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich, 3,734,428.

Ahl, Nils Boran: *See—*
Flinth, Rune Nils Allan; Ahl, Nils Boran; Larsson, Lars Herbert; and Nordstrom, Kjell Helge, 3,734,217.

Ahlen, Karl Gustav, to S.R.M. Hydromekanik AB. Improvements in and relating to forward/reverse gear transmissions. 3,734,252, Cl. 192-3.520.

Ahlstrom A. Oxakeyhtio: *See—*
Dorfel, Gerhard Walter, 3,734,371.

Ahlstrom, John F.: *See—*
Cornell, Clark; Himler, Gary J.; and Ahlstrom, John F., 3,735,348.

Ahrens, Erhard; Prill, Christian; and Wendorff, Hans H., to Electroacustic GmbH. Method and system for the positionally correct recording of two echo signals from respective echo soundings taken in mutually opposed sounding directions. 3,735,334, Cl. 340-300r.

Aiken, William Ross, to Display Technology Corporation. Liquid crystal display device having an inclined rear reflector. 3,734,598, Cl. 350-160.20c.

Aintablian, Avedis A., to International Systems Management. Use of composted refuse to make construction products. 3,734,988, Cl. 264-82.000.

Air Conditioning Corporation: *See—*
Hungate, Ernest C.; Ogletree, Harold A.; and Nickell, Grason T., 3,733,778.

Air Monitor Corporation: *See—*
De Baun, Kenneth W., 3,733,900.

Air Preheater Company, Inc., The: *See—*
Anderson, William M.; and Dervay, John R., 3,733,784.

Air Products and Chemicals, Inc.: *See—*
Biskis, Edward G., 3,734,293.
Danzig, Meyer H.; and Carlson, Allen W., 3,734,806.

Airco, Inc.: *See—*
Duron, Paul P.; Carter, Thomas A., Jr.; and Mondok, Frank, 3,733,848.
Estes, James W.; Geiger, Lewis J., Jr.; and Shepherd, Thomas L., 3,734,719.
McNabney, Ralph; and Huibers, Th. A. Derk, 3,734,846.
Taplin, Ronald H., 3,734,091.

Aizawa, Kensuke: *See—*
Soya, Masahiro; Aizawa, Kensuke; and Hasegawa, Hiroaki, 3,733,896.

Akashi, Robert. Rotary potentiometer with fine adjustment. 3,735,325, Cl. 338-164.000.

Akerberg, Olof Robert Wilhelm. Arrangement in receptacles for receiving materials, particularly refuse. 3,734,008, Cl. 100-218.000.

Akiyama, Jiro, to Kanayawa Kiki Kogyo Co., Ltd. Automatic continuously backflow washing-type filter. 3,734,299, Cl. 210-333.000.

Akiyama, Yoshio; Sato, Tadanori; and Koyama, Shinobu, to Fuji Heavy Industry Co. System for purifying the exhaust gas of a two-cycle gasoline injection engine. 3,734,069, Cl. 123-32.0sp.

Aktiebolaget Bofors: *See—*
Nilsson, John Martin; and Palicka, Jadwiga, 3,734,956.

Aktiebolaget Forenade Superfosfatfabriker: *See—*
Hamrin, Bjorn Staffan Artur, 3,734,987.

Aktiebolaget Tudor: *See—*
Odman, Tor Axel, 3,734,167.

Aktiengesellschaft Gebruder Loepfe: *See—*
Palmer, Allan M., 3,734,422.

Aktiengesellschaft Kuhnle, Kopp & Kausch: *See—*
Reisacher, Josef; Klaue, Hans Joachim; Jacoby, Ewald; and Bergmeier, Dieter, 3,734,650.

Aladdon Manufacturing Company: *See—*
Wintz, Donald E., 3,734,439.

Albright, Charles Jere. Method for pressurized cooking of food in high-temperature non-aqueous liquid. 3,734,744, Cl. 99-107.000.

Alburn, Harvey E.; and Dvonch, William, to American Home Products Corporation. Carbamates of norbornanes. 3,734,949, Cl. 260-482.00b.

Aldrich, Charles A.; and Land, Karl M., to Cities Service Oil Company. Forward looking sonic wellbore inspector. 3,735,338, Cl. 340-18.00r.

Alecci, Donald E.: *See—*
Sinnott, David J.; and Alecci, Donald E., 3,733,983.

Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich. Carriage for containers. 3,734,428, Cl. 243-33.000.

Alfa-Laval AB: *See—*
Larsen, Hans Christian, 3,734,741.

Alicot, Marie-Josephe Jeanne: *See—*

Roe, Rene Pierre Victor; Levavasseur, Andre Adolphe Rene; Sureau, Robert Frederic Michel; and Alicot, Marie-Josephe Jeanne, 3,734,905.

Allan, John W.: *See—*
Walden, Ernest J.; and Allan, John W., 3,734,786.

Allegheny Ludlum Industries, Inc.: *See—*
Kozak, Larry M.; and Southern, Raymond L., 3,734,384.
Kozak, Larry M.; and Southern, Raymond L., 3,734,385.

Allen, David Thomas, to Deere & Company. Safe starting system for lawn and garden equipment. 3,733,794, Cl. 56-10.500.

Allen, Irving, to Sargent and Company. Compound action tool with wire stripper and bolt cutter. 3,733,626, Cl. 7-5.300.

Allen, Richard G.; and Torick, Emil, to Columbia Broadcasting System, Inc. Dynamic presence filter. 3,735,275, Cl. 330-59.000.

Allen, William G., Jr. Self feeding flower pot. 3,733,746, Cl. 47-38.000.

Allied Chemical Corporation: *See—*
Lipscomb, Walter Peter; and Shelburne, Eli Bently, Sr., 3,734,803.
Lofquist, Robert Alden, 3,734,892.

Allis, Lewis, Company, The: *See—*
Wickersheimer, Jack C., 3,735,167.

Allis-Chalmers Manufacturing Company: *See—*
Curtis, Donald R., 3,734,821.

Almegard, Svante G.; and Ericson, Harry A. H., to Nordnero AB. Cleaning devices for chemical or electro-chemical surface treatment plants. 3,734,108, Cl. 134-76.000.

Alongi, John R.: *See—*
Elders, Gerald W.; Schneider, Thomas E.; and Alongi, John R., 3,734,380.

Alpine Aktiengesellschaft: *See—*
Kaiser, Fritz W., 3,734,413.

Alps Electric Co., Ltd.: *See—*
Yanaga, Makoto; and Shimojo, Takemi, 3,735,068.

Altadonna, James. Liquid processing system. 3,734,854, Cl. 210-203.000.

Altmann, Josef, to Telephon- und Telegraphen-Fabriks Aktiengesellschaft. Multi-contact terminal support assembly for an electromagnetic relay. 3,735,294, Cl. 335-134.000.

Aluminium Suisse S.A.: *See—*
La Roche, Rene, 3,734,782.

Aluminum Company of America: *See—*
Anderson, Arvid N.; and Batterman, Richard H., 3,733,878.
Seger, Edward J., 3,735,253.
Urbanic, John M.; Fox, D. Marshall; and Panian, Frederick C., 3,735,084.

Alza Corporation: *See—*
Shio, Hideo; and Ramwell, Peter W., 3,735,005.
Zaffaroni, Alejandro, 3,734,097.

Amada Company Limited: *See—*
Fukugami, Goro; Tamura, Chiaki; Taguchi, Masayuki; and Maekawa, Kenichi, 3,733,952.

Amana Refrigeration, Inc.: *See—*
Foerstner, George C., 3,735,081.

Amaral, Wallace: *See—*
Gutierrez, Thomas; and Amaral, Wallace, 3,734,700.

Ambler Electronics: *See—*
Kampmeyer, Roy, 3,735,412.

Ambrogi, Vittorio; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, to Erba, Carlo, S.p.A. Certain diazinylcarboxamidoethylbenzenesulfonylureas. 3,734,910, Cl. 260-250.00a.

Amerel Company, Inc.: *See—*
Brummet, Paul L.; and Isley, Sigmund G., 3,734,027.

American Air Filter Company, Inc.: *See—*
Young, George W., 3,733,793.

American Aniline Products, Inc.: *See—*
Genta, Guido R.; and American Aniline Products, Inc., 3,734,933.

American Aviation Corporation: *See—*
Donnelly, Thomas S.; and Seidel, William C., 3,735,340.

American Cyanamid Company: *See—*
Coscia, Anthony Thomas; and Williams, Laurence Lyman, 3,734,977.
Maulding, Donald Roy, 3,734,862.
Newman, Howard; and Fields, Thomas Lynn, 3,734,931.
Schaefer, Frederic Charles; and Wright, Alan Carl, 3,734,939.
Sydor, Walter Joseph, 3,734,941.
Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, 3,734,915.
Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, 3,734,916.

American Express Investment Management Company: *See—*
Macovski, Albert, 3,735,036.

American Home Products Corporation: *See—*
Alburn, Harvey E.; and Dvonch, William, 3,734,949.
Diebold, James L.; Sanet, Joel S.; and Wolf, Milton, 3,734,903.
Diebold, James L.; and Wolf, Milton, 3,734,906.
Husbands, George E. M.; and Stein, Reinhardt P., 3,734,935.
Schneller, George H.; Levi, Ralph S.; Levin, Howard J.; and Goodsir, Stephen W., 3,734,098.
Wendt, Gerhard R.; Clark, Donald E.; and Grant, Norman H., 3,734,904.

American Hospital Supply Corporation: *See—*
Murdough, Charles P.; and Neely, Alfred W., 3,734,077.

American Seating Company: *See—*
Barecki, Chester J.; and Henrikson, Bror W., 3,734,561.

American Spin-A-Batch Company: *See—*
Garrison, William H., 3,734,337.

American Store Equipment Corporation: *See—*
Schulte, Donald W.; and Logie, Charles F., 3,733,759.

Amex Phosphates, Inc.: *See—*
Burns, Tom V., 3,734,708.

Amitay, Noach, to Bell Telephone Laboratories, Incorporated. Method and apparatus for reducing crosstalk on cross-polarized communication links. 3,735,266, Cl. 325-60.000.

Amneus, John S.; and Thomas, Malcolm H., to Procter & Gamble Company, The. Shipping container for supporting and protecting a plurality of articles. 3,734,280, Cl. 206-65.00r.

Amoco-Production Company: *See—*
Widess, Moses B., 3,735,337.

AMP Incorporated: *See—*
Manning, Randy Marshall, 3,735,017.

AMP Incorporated, mesne: *See—*
Masino, Carlo; and Gilardino, Paolo, 3,734,992.

Ampex Corporation: *See—*
Corcoran, John W., 3,735,258.
Long, Edward M., 3,735,336.

Anaconda Wire and Cable Company: *See—*
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwick H., 3,735,025.

Anchor Hocking Corporation: *See—*
Foss, George J., 3,734,333.

Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc., mesne. Tubular writing point especially for automatic drafting machines. 3,734,633, Cl. 401-259.000.

Andersen, Marinus Leland, to Hach Chemical Company. Series voltage regulator wherein an FET supplys a constant current reference voltage to a differential comparator. 3,735,242, Cl. 323-22.00t.

Anderson, Arvid N.; and Batterman, Richard H., to Aluminum Company of America. Roll end relief for rolling mills. 3,733,878, Cl. 72-241.000.

Anderson, Charles Elmor; and Cardoza, Clarence Anthony, to Litton Systems, Inc. Traveling wave tube with coax to helix impedance matching sections. 3,735,188, Cl. 315-3.500.

Anderson, David W.; Gustafson, Richard N; Johnson, Lance H.; and Sparacio, Francis J., to International Business Machines Corporation. High speed buffer operation in a multi-processing system. 3,735,360, Cl. 340-172.500.

Anderson, Donald R.; and Frisque, Alvin J., to Nalco Chemical Company. Rapid dissolving water-soluble polymers. 3,734,873, Cl. 260-29.60h.

Anderson, James D., to Dymo Industries, Inc. Two colored tape. 3,734,808, Cl. 161-6.000.

Anderson, Kent V.: *See—*
Bilhorn, John M.; Bergum, Bernard C.; and Anderson, Kent V., 3,734,780.

Anderson, Leonard E. Vehicle frame and interchangeable components. 3,734,223, Cl. 180-64.001.

Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergois, 3,734,672.

Anderson, Preston W. Cross-over sealing means. 3,734,514, Cl. 277-233.000.

Anderson, Robert L.; and Fromm, Marvin M., to Portec, Inc. High voltage insulated coil and machine utilizing the same. 3,735,168, Cl. 310-200.000.

Anderson, William J., to Solar Hardware Corporation. Modern door knocker. 3,734,054, Cl. 116-148.000.

Anderson, William M.; and Dervay, John R., to Air Preheater Company, Inc., The. Electro-bag dust collector. 3,733,784, Cl. 55-117.000.

Andersson, Henry; Dahl, Goran; and Arnell, C. G. Powder propellant cartridge. 3,734,024, Cl. 102-100.000.

Andersson, Louis. Combustion gas generator. 3,733,820, Cl. 60-39.770.

Andersson, Per Lennart: *See—*
Le Gault, Richard L.; and Andersson, Per Lennart, 3,734,010.

Andresen, Jens Nicolai, to Danfoss A/S. Snap-action electric switch. 3,735,069, Cl. 200-67.00d.

Andresen, Jens Nicolai. Snap-action electric switch. 3,735,080, Cl. 200-67.00p.

Andrews, Robert S., to McDonnell Douglas Corporation. Hydraulic system. 3,733,969, Cl. 91-421.000.

Anikanov, Nikoli Ivanovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich, 3,733,774.

Annis, Robert E., to General Motors Corporation. Transmission and hydraulic source. 3,733,920, Cl. 74-763.000.

Annis, Robert E.; and Cheek, Forrest R., to General Motors Corporation. Hydrodynamic unit with mechanical drive clutch. 3,734,251, Cl. 192-3.300.

Anthes Equipment Limited: *See—*
Weeden, Robert G., 3,734,467.

Anti-pick tumbler lock device: *See—*
Greenwald, Harry; and Kidde, Walter, & Company, Inc., 3,733,864.

Aoba, Takashi: *See—*
Itou, Moriyuki; and Aoba, Takashi, 3,734,449.

Apolant, Richard, to S.C.J. Associates Inc. Oscillator system. 3,735,276, Cl. 331-11.000.

Appleton, Arthur I.; Turner, Duncan; and Pastorel, Robert J., to Appleton Electric Company. Explosion proof box with door mounted switch. 3,735,078, Cl. 200-168.00g.

Appleton Electric Company: *See*—
Appleton, Arthur I.; Turner, Duncan; and Pastorel, Robert J., 3,735,078.

Arai, Shinichiro: *See*—
Ueno, Ryuzo; Miyazaki, Tetsuya; Matsuda, Toshio; and Arai, Shinichiro, 3,734,748.

Arbeitland, Erich: *See*—
Maier, Horst; Arbeitland, Erich; and Kleber, Peter, 3,733,758.

Arbiter, William: *See*—
Kolodney, Morris; and Arbiter, William, 3,734,690.

Arcair Company: *See*—
McCall, Kenneth E.; and Reese, Donald H., 3,735,085.

Archer, Donald H.; and Prickett, Robert J., to Raytheon Company. Signal spectrum analyzer. 3,735,256, Cl. 324-77.00d.

Ares, Roland A.; Bullard, Russell H.; and Spear, Ernest L., to Singer Company, The, mesne. Coil for air duct installation. 3,734,171, Cl. 165-54.000.

Arimura, Tohru; Okado, Masaru; Fukuma, Yuji; and Ido, Yoshimitsu, to Nippon Kokan Kabushiki Kaisha. Method of controlling a continuous hot rolling mill. 3,733,866, Cl. 72-6.000.

Ark-Les Switch Corporation: *See*—
O'Donnell, Paul E.; and Leaf, H. Vincent, 3,735,331.

Arman, Dario. Windshield wiper for automotives. 3,733,643, Cl. 15-250.420.

Armitage, Firth Kay. Methods of preparing wall covering. 3,733,689, Cl. 29-559.000.

Armours Pharmaceutical Company: *See*—
Rubino, Andrew M., 3,734,940.

Armstrong, Clarence J.; and Cronig, Alvin, to Itek Corporation. Apparatus for washing of photographic material. 3,733,994, Cl. 95-97.000.

Armstrong, James E. Pipe pallet. 3,734,281, Cl. 206-65.00b.

Arnell, C. G.: *See*—
Andersson, Henry; Dahl, Goran; and Arnell, C. G., 3,734,024.

Arnett, Samuel E., to Bendix Corporation, The. Thrust control mechanism. 3,733,825, Cl. 60-235.000.

Arnoldy, Roman F., to R. I. Patents, Inc. Method and apparatus for adjustable metering. 3,735,087, Cl. 219-73.000.

Arrow-Hart, Inc.: *See*—
Tirrell, James R., 3,735,332.

Arthur, Eric Richard. Dressmaking forms. 3,734,362, Cl. 223-68.000.

Arylthioanthraquinones: *See*—
Genta, Guido R.; and American Aniline Products, Inc., 3,734,933.

Asahi-Dow Limited: *See*—
Watanabe, Hiroshi, 3,734,273.

Asano, Kazuo; Furukawa, Minoru; and Kanda, Nobuo, to Daiichi Seiyaku Company, Limited. Novel antibiotics produced from the strains of streptomyces phaeoverticullatus and their method of preparation. 3,735,006, Cl. 424-122.000.

Asberg, Sture Lennart; and Timmer, Hendrikus Jacobus Maria, to SKF Industrial Trading and Development Company N.V. Bearing assembly for a swivel castor. 3,733,648, Cl. 16-21.000.

Ascoli, Enzo, to Paillard S.A. Supply device for an outlet nozzle in an ink jet writing method. 3,735,199, Cl. 317-3.000.

Ashany, Pon; Audreisch, Leo M., Jr.; and Pisterzi, Michael J., to International Business Machines Corporation. Shift register interconnection system. 3,735,362, Cl. 340-172.500.

Asher, William J.: *See*—
Li, Norman N.; and Asher, William J., 3,733,776.

Ashfield, Herbert Edward, to Brown, David, Tractors Limited. Liquid cooled clutches. 3,734,259, Cl. 192-113.000.

Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., to General Electric Company. Article handling system. 3,733,960, Cl. 89-33.0mc.

Ashmore, Benson, Pease & Company, Limited: *See*—
Atkinson, Donald Alan, 3,734,479.

Asmus, Richard W.; and Jecker, Andrew E. Sealed container assembly and method of making same. 3,734,044, Cl. 113-121.00c.

Assenza, John S.: *See*—
Petterson, Dewitt R.; Assenza, John S.; and Kipp, Henry A. W., 3,734,080.

Astheimer, Robert W., to Barnes Engineering Company. Infrared two gas analyzer. 3,735,127, Cl. 250-43.50r.

Atchley, Frank W. Demand delivery watering valve for animals. 3,734,063, Cl. 119-72.500.

Ateliers Diederichs: *See*—
Remond, Pierre, 3,734,144.

Atkins, Carl E., to Wagner Electric Corporation. Capacitance responsive control circuits. 3,735,379, Cl. 340-258.00c.

Atkinson, Donald Alan, to Ashmore, Benson, Pease & Company, Limited. Hollow vessel with annular external support ring. 3,734,479, Cl. 266-36.000.

Atkinson, Louis D., to Johnson Service Company. Fluid diaphragm modulator. 3,734,117, Cl. 137-82.000.

Atlantic Design & Development Corporation: *See*—
Waterman, Neil S.; and Lachowicz, Stanley F., 3,734,350.
Waterman, Neil S., 3,734,359.

Atlas Pacific Engineering Company, mesne: *See*—
Loveland, Malcolm W., 3,734,002.

Audreisch, Leo M., Jr.: *See*—
Ashany, Pon; Audreisch, Leo M., Jr.; and Pisterzi, Michael J., 3,735,362.

Auphan, Michel Joseph; and Perilhou, Jean Robert, to U.S. Philips Corporation. Device for measuring the flow rate of a liquid. 3,733,899, Cl. 73-204.000.

Austermann, Herbert, to Rappold, Hermann, & Co., GmbH. Reinforced pig iron wear plate. 3,734,699, Cl. 29-191.400.

Auto-Time Distributors, Inc.: *See*—
Maruyama, Susumu, 3,734,680.

Autolectron Corporation: *See*—
Zeitlin, Richard A., 3,735,097.

Automatic Power Division: *See*—
Dodge, Robert J., 3,734,053.

Automation Industries, Inc.: *See*—
Weighart, Frederick G., 3,733,891.

Automation Systems, Incorporated: *See*—
Reynolds, William B., 3,733,961.

Automobiles Peugeot: *See*—
Fourrey, Francois, 3,734,562.

Avalear, Gary Powell, to Topper Corporation. Measuring devices having means to control the motion of the free spindle. 3,733,705, Cl. 33-147.00r.

Avco Corporation: *See*—
Bowers, Russell E.; and Warpenburg, Norman L., 3,734,022.
Karol, Joseph A., 3,733,815.
Lane, Buddy F.; and Church, Donald E., 3,735,343.

Avery, Leslie Ronald, to RCA Corporation. Vertical deflection circuits utilizing both regenerative and degenerative feedback for generating parabolic voltages. 3,735,192, Cl. 315-27.0td.

Aydin, Kemal M.; and Selnick, Lester L., to Singer Company, The. Dual purpose character generator. 3,735,042, Cl. 178-15.000.

Aylies, Sargeant E.; Hillhouse, Mial T.; Kyriakis, Alexander; and Pengilly, Brian W., to Goodyear Tire & Rubber Company, The. Preparation of polymeric aromatic compositions. 3,734,866, Cl. 260-2.00r.

Ayres, Ralph C.: *See*—
Rogers, Leslie; and Ayres, Ralph C., 3,735,187.

Aziende Colori Nazionali Affini Acna S.p.A.: *See*—
Moiso, Ugo; and Papa, Sisto, 3,734,857.

Azuma, Koichi. Automatic tester for testing resistance and inductance of coil windings. 3,735,252, Cl. 324-59.000.

Babunovic, Momir; and Faant, Siamac, to Barry-Wehmiller Company. Container flaw inspection apparatus. 3,735,144, Cl. 250-223.00b.

Bach & Co.: *See*—
Pfenning, Hans, 3,735,297.

Bach, Lloyd G., to Bendix Corporation, The. Brake pedal travel limiter for hydraulic brake booster. 3,733,968, Cl. 91-391.00r.

Bachofer, Henry L.; and Chang, Robert C. C., to Sun Oil Company of Pennsylvania. Relay circuit for motor control. 3,735,224, Cl. 318-284.000.

Bade, Heribert; Bellefontaine, August; and Kienast, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Preparation of titanium dioxide concentrates an iron oxide pigments from ilmenite. 3,734,996, Cl. 423-83.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,734,712.
Mayer, Johann; and Schmidt-Hellerau, Christof, 3,734,918.
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.
Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, 3,734,951.

Badische Anilin-& Soda-Fabrik Aktiengesellschaf: *See*—
Hoffmann, Werner; Pasedach, Heinrich; and Pommer, Horst, 3,734,967.

Bagley, Richard O. Aquatic sporting device. 3,733,630, Cl. 9-311.000.

Bailey, Allen N. Tie rod assembly. 3,734,453, Cl. 249-213.000.

Bailey, Robert J., to Grace, W. R., & Co. Silverless photographic printing paper. 3,734,725, Cl. 96-35.100.

Bailey, Todd D. Trough structure. 3,733,832, Cl. 61-15.000.

Baker, Fred E., to General Electric Company. Electrically heated hair curling apparatus. 3,735,091, Cl. 219-400.000.

Baker, Henry Louis; Quinton, Kenneth Charles; and Smart, Daniel Henry, to Communications Patents Limited. Television demodulator with short and long time constants. 3,735,037, Cl. 178-7.30r.

Baker, Richard L., to Colts Inc. Shell extractor for firearm with falling breechblock. 3,733,729, Cl. 42-23.000.

Baker, Richard L., to Colts Inc. By-pass hand connection. 3,733,730, Cl. 42-65.000.

Balke, Roy Leonard; and Cipriani, Domenico, to General Electric Company. Channel, shaped, laminated, high temperature slot wedge for dynamoelectric machines. 3,735,169, Cl. 310-214.000.

Balle, Walter, to Herbert, Leonhard, Maschinenfabrik. Tyre vulcanizing press. 3,734,656, Cl. 425-34.000.

Ballmer, Ernst, to Hatebur, F. B., AG. Method and apparatus for compression forging of components. 3,733,873, Cl. 72-332.000.

Balogh, Arbad: *See*—
Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.

Balogh, Edward, Jr.; and Cook, Darwen J., to Burroughs Corporation. Digital processor having variable length addressing. 3,735,355, Cl. 340-172.500.

Balser, Martin; Nagy, Arthur E.; and Proudian, Andrew P., to Xonics Inc. Aircraft vortex detection system. 3,735,333, Cl. 340-1.00r.

Balzer, Norbert R.: *See*—
Seyfried, Richard F.; and Balzer, Norbert R., 3,735,083.

Bangor Punta Operations, Inc.: *See*—
Fong, Leong Quock, 3,734,567.

Bank, Herbert M. Package for providing a packaged product. 3,734,276, Cl. 206-47.00r.

Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, to Agence Nationale de Valorisation de la Recherche (Anvar). Magnetic memory. 3,735,373, Cl. 340-174.0na.

Bard, Douglas C., to Beatrice Foods Co. Bucket chassis. 3,734,527, Cl. 280-79.100.

Bardwick, John, III. Inertial energy system for vehicles. 3,734,222, Cl. 180-54.00r.

Barecki, Chester J.; and Henrikson, Bror W., to American Seating Company. Sled base frame chair. 3,734,561, Cl. 297-239.000.

Barker, George Paton: *See—*
McKay, Cameron Edward; and Barker, George Paton, 3,734,564.

Barker, Graham; and Gordon, Ronald H., to Witco Chemical Corporation. Pre-electric shave compositions. 3,734,858, Cl. 252-90.000.

Barkow, William Henry: *See—*
Gross, Josef; and Barkow, William Henry, 3,735,299.

Barmbold, Hermann: *See—*
Wolf, Konrad; and Barmbold, Hermann, 3,734,411.

Barnes Engineering Company: *See—*
Astheimer, Robert W., 3,735,127.

Barnett, John E., to Stryker Corporation. Pneumatically powered device. 3,734,652, Cl. 418-70.000.

Barnett, Roy F.; Levy, Warren W.; and Simons, Dolph, to Simco Company, Inc., The. Electrostatic discharge devices with high temperature arc resistance. 3,735,198, Cl. 317-2.00f.

Barnhardt, Robert W.; and Grubbs, William J., to Zellweger AG. Method and apparatus for the continuous withdrawal of samples from industrial process baths or the like for analysis. 3,733,906, Cl. 73-421.00b.

Barrere, Clem A., Jr., to Continental Oil Company. Adsorption process for recovering adsorbable components from a multi-component gas stream. 3,733,775, Cl. 55-28.000.

Barry-Wehmiller Company: *See—*
Babunovic, Momir; and Faant, Siamac, 3,735,144.

Bartels, Friedrich. Wall structures. 3,733,765, Cl. 52-474.000.

Bartels, Ulrich: *See—*
Schroder, Jurgen; Von Osten, Reimer; Nussbaum, Hans-Georg; and Bartels, Ulrich, 3,735,385.

Baseball game: *See—*
La Monica, John, 3,734,501.

Bassemir, Robert W.; and Mayer, Julius Robert, to Sun Chemical Corporation. Reflector and cooling means therefor. 3,733,709, Cl. 34-4.000.

Basso, Julius C.: *See—*
Marsh, Richard P.; Whannel, Ralph E.; and Basso, Julius C., 3,734,452.

Bateman, Robert F., to Plastics, Inc. Double stack interlocking trays. 3,734,309, Cl. 214-10.50r.

Batistelli, Nello: *See—*
Batistelli, Nello; and Adams, James P.S. (said Adams assor. to said), 3,734,357.

Batistelli, Nello; and Adams, James P.S., said Adams assor. to said Batistelli, Nello. Portable holder for pressurized containers. 3,734,357, Cl. 222-323.000.

Batleman, Harvey Lionel: *See—*
von Dohlen, Werner Claus; and Batleman, Harvey Lionel, 3,734,878.

Batson-Cook Company: *See—*
Perry, Cooper, 3,734,374.

Battaglia, Patrick A.; and Fitzwater, Edwin, to General Signal Corporation, The. Motor brush holder. 3,735,172, Cl. 310-239.000.

Batterman, Richard H.: *See—*
Anderson, Arvid N.; and Batterman, Richard H., 3,733,878.

Baxter Laboratories, Inc.: *See—*
Heiss, Louis Robert, 3,734,601.

Bayha, Wulf: *See—*
Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, 3,735,220.

Bayne, Dennis R.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, 3,735,261.

Baynes, William R.; and Handler, Elliot, to Mattel, Inc. Track system for toy vehicle. 3,734,404, Cl. 238-10.00e.

Bazell, Seymour: *See—*
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., 3,734,100.

Bean, Claude T., Jr.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., 3,734,976.

Beard, Albert, to Firth Cleveland Extrusions, Limited. Self locking nuts. 3,734,156, Cl. 151-21.00b.

Beasley, Donald L., to Townsend Engineering Company. Hold down attachment for a skinning machine. 3,733,997, Cl. 99-233.110.

Beatrice Foods Co.: *See—*
Bard, Douglas C., 3,734,527.
Kiziol, Walter, 3,734,076.

Beaubien, Laurent A., to United States of America, Navy. Buoyant matrix materials. 3,733,629, Cl. 9-8.00p.

Beauchet, Jean, to Societe Nouvelle de Roulements. Combination bearing materials. 3,734,582, Cl. 308-173.000.

Beausoleil, William F., to International Business Machines Corporation. Full capacity monolithic memory utilizing defective storage cells. 3,735,368, Cl. 340-173.00r.

Bechtold, Johann, to Maschinenfabrik Moenus Aktiengesellschaft. Roughening machine for lasted uppers. 3,733,632, Cl. 12-1.00r.

Beck, Richard, Jr., to Sundstrand Corporation. Centrifugal. 3,734,637, Cl. 415-122.00r.

Becker, Anthony F. Floor scraper. 3,733,637, Cl. 15-93.00r.

Becker, John V.; and Bellinger, Arthur A., to National Lead Company. Process for producing titanium dioxide product containing aluminum oxide. 3,734,761, Cl. 106-300.000.

Becker, Larry T.: *See—*
Nyman, Bengt E.; and Becker, Larry T., 3,733,931.

Becker, Wilhelm, to Reichhold-Albert-Chemie Aktiengesellschaft. N-alkylene-oxy-alkyleneamines of hydroxybenzylamines. 3,734,965, Cl. 260-570.50p.

Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., to United States of America, Navy. Hydrogen generating compositions. 3,734,863, Cl. 252-188.000.

Beckmann, Gunter: *See—*
Pfeiffer, Kurt; Dietrich, Johannes; Schonberg, Karl-Heinz; and Beckmann, Gunter, 3,734,400.

Becton Dickson and Company: *See—*
Lucker, Jerome; Oakes, Andrew A.; and Foster, Thomas H., Jr., 3,734,692.

Beers, Leroy Walter; and De Santis, Alfred John, to Burroughs Corporation. Information processing system employing stored microprogrammed processors and access free field memories. 3,735,363, Cl. 340-172.500.

Beery, Jack; and Templeton, William B., to Burroughs Corporation. Movable gap-control device. 3,734,491, Cl. 271-51.000.

Beier, Werner E.: *See—*
Paliyenko, Paul; and Beier, Werner E., 3,734,993.

Beling, Thomas E., to Sigma Instruments Inc. Electronic lighting control responsive to ambient light. 3,735,141, Cl. 250-214.00r.

Bell & Howell Company: *See—*
Henriksen, Elmer C., 3,734,425.
Howes, Peter A.; and Cooper, Eugene A., 3,734,426.
Perkins, George D.; and Colbert, John R., 3,735,161.

Bell, Hans K.; and Hay, Gilbert, Jr., to Symons Corporation, mesne. Electrical hoist control system. 3,735,221, Cl. 318-151.000.

Bell, Paul R.: *See—*
Carls, Billy F.; and Bell, Paul R., 3,733,768.

Bell, Rupert B. Fuel pump. 3,734,292, Cl. 210-172.000.

Bell Telephone Laboratories, Incorporated: *See—*
Amitay, Noach, 3,735,266.
Carbrey, Robert L., 3,735,393.
Feldman, Martin, 3,734,599.
Hamilton, Billy Harold; and Wilhart, Helmut, 3,735,235.
Johnston, Wilbur Dexter, Jr., 3,735,280.
Kaneko, Hisashi, 3,735,392.
Krambeck, Robert Harold; and Sequin, Carlo Heinrich, 3,735,156.
La Duca, Joseph, 3,735,239.
Michaelis, Paul Charles, 3,735,370.
Nagel, Harry Henry, 3,735,312.
Thomas, Edmond Joseph, 3,735,055.
Trambarulo, Ralph Francis, 3,734,594.

Bellefontaine, August: *See—*
Bade, Heribert; Bellefontaine, August; and Kienast, Gerhard, 3,734,996.

Bellinger, Arthur A.: *See—*
Becker, John V.; and Bellinger, Arthur A., 3,734,761.

Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., to GAF Corporation. Process for using N-alkyl lactam for stripping sulfur dioxide from gas streams and recovering liquid SO_2. 3,733,780, Cl. 55-73.000.

Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., to GAF Corporation. Recovery of N-alkyl lactams employed in stripping of sulfur dioxide from gas streams. 3,733,781, Cl. 55-73.000.

Bellisto, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., to GAF Corporation. Stripping of sulfur dioxide from gas streams by use of N-alkyl lactams. 3,733,779, Cl. 55-73.000.

Bellovary, Louis; and Popma, Al O., to Modine Manufacturing Company. Heat exchanger. 3,734,177, Cl. 165-166.000.

Beloit Corporation: *See—*
Oas, David C., 3,734,399.

Belser, Karl Arnold, to International Business Machines Corporation. Multiple hammer magnetic pole piece block. 3,734,013, Cl. 101-93.00c.

Bender, Herman G.; Page, Robert N.; and Wold, Leslie D. Powered surgical cutter. 3,734,099, Cl. 128-305.000.

Bendix Corporaion, The: *See—*
Rogers, Leslie; and Ayres, Ralph C., 3,735,187.

Bendix Corporation, The: *See—*
Arnett, Samuel E., 3,733,825.
Bach, Lloyd G., 3,733,968.
Brown, Arthur King, Jr., 3,733,966.
Centner, Ronald M.; and Kamm, Vernon C., 3,735,044.
Cramer, Robert L.; Henneman, John W.; and Myers, William P., 3,734,078.
Dorsey, Charles M.; Laurent, Harold J.; Slavin, Michael; and Stauffer, Reuben Laverne, 3,735,268.
Hickner, George B.; Slavin, Michael; and Howard, Donald W., 3,734,572.
Knockeart, Ronald P.; and Russo, Frank A., 3,735,096.
Lewis, Richard L., 3,734,574.

MacDuff, Stanley I., 3,733,817.
MacDuff, Stanley I., 3,734,226.
Monroe, William E., 3,733,822.
Reddy, Junuthula N., 3,734,068.
Wolber, William G., 3,734,623.

Bendix-Westinghouse Automotive Air Brake Company: *See—*
Davis, Dennis J.; Kurichh, Sham L.; and Pataky, Gilbert A., 3,734,573.

Bendzick, Marvin F., to Cities Service Company. Folding highway emergency device. 3,734,595, Cl. 350-97.000.

Benerito, Ruth R.: *See—*
Perrier, Dorothy M.; and Benerito, Ruth R., 3,734,685.

Benetti, John G.; and Sturgeon, Walter L., to Pengo Corporation. Head for horizontal boring. 3,734,214, Cl. 175-384.000.

Bengtsson, Bengt Lennart; Bosund, Sven Ingmar Walton; and Hylmo, Bertil, to Produits Findus S.A. Preparation of deep-frozen vegetables. 3,734,751, Cl. 99-193.000.

Beninate, John V.: *See—*
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., 3,734,684.

Benjamin, Milton L., to Erickson Tool Company. Quick change tool holder. 3,734,517, Cl. 279-81.000.

Benner, Jean-Rene; Dop, Pierre; and Caron, Marcel, to Webb, Jervis B., International Company. Magnetic coding device for moving bodies such as conveyor carriers. 3,735,300, Cl. 335-206.000.

Bennett, Charles H. Disposal system for human waste. 3,733,617, Cl. 4-10.000.

Bennett, Frank C.; and Felix, Gerardus L., to General Motors Corporation. Valve stem assembly for a tubeless tire rim. 3,734,158, Cl. 152-427.000.

Bennett, John Richardson: *See—*
Rowe, Alan Charles; and Bennett, John Richardson, 3,734,120.
Rowe, Alan Charles; and Bennett, John Richardson, 3,734,121.

Bennett Pump Incorporated: *See—*
Zanoni, Paul; and Shunta, Richard F., 3,734,124.

Bennett, Victor A., Jr., to Currier-Smith Corporation. Electronic resistance memory. 3,735,367, Cl. 340-173.0sp.

Bennett, Weston T.; Coveney, Donald B.; Lamb, Charles A.; and Hanson, Jonathan Leslie, to Black Clawson Company, The. Headbox for vertical double-wire paper machine. 3,734,822, Cl. 162-343.000.

Bennett, William N. Molded ski. 3,734,519, Cl. 280-11.13r.

Bereday, Sigmund: *See—*
Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H. (said Kolic, Lutz, Grotta and Gibbs assors. to), 3,734,784.

Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H., said Kolic, Lutz, Grotta and Gibbs assors. to Bereday, Sigmund. Treating aluminum surfaces. 3,734,784, Cl. 148-6.270.

Berg, Ib Anthon. Passive radiometric detection system. 3,735,405, Cl. 343-100.0me.

Bergeron, John A., to General Electric Company. Means for applying suction having automatic cutoff of displacement volume. 3,734,358, Cl. 222-326.000.

Bergmeier, Dieter: *See—*
Reisacher, Josef; Klaue, Hans Joachim; Jacoby, Ewald; and Bergmeier, Dieter, 3,734,650.

Bergum, Bernard C.: *See—*
Bilhorn, John M.; Bergum, Bernard C.; and Anderson, Kent V., 3,734,780.

Bernier, Edgar R.: *See—*
Hayner, Paul F.; and Bernier, Edgar R., 3,734,130.

Bernstein, Bernard J. Barbecue spit and drive mechanism. 3,733,999, Cl. 99-337.000.

Bernstein, Jack; and Losee, Kathryn A., to Squibb, E.R., & Sons, Inc. Tris-triiodoisophthalamic acids, and derivatives. 3,734,953, Cl. 260-501.110.

Berthelemy, Jacques; Boul, Pierre Germain R.; and Sauvan, Jacques Louis, to Societe Anonyme: Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. System for discovering a critical path in a network. 3,735,109, Cl. 235-185.000.

Bertoni, Luigi; Pizzamiglio, Giancarlo; Fava, Renato; and Cimarosti, Giordano, to Montecatini Edison S.p.A. Equipment for the control and the regulation of an alkali-chlorine electrolysis plant with mercury-cathode cells. 3,734,848, Cl. 204-220.000.

Besson, Rene: *See—*
Nikles, Francois; and Besson, Rene, 3,733,917.

Bestian, Walter. Dialkyl-xanthine derivatives. 3,734,911, Cl. 260-256.000.

Beun, Matthijs; and Reijnierse, Pieter, to U.S. Philips Corporation. Method of and device for preparing characters for recognition. 3,735,349, Cl. 340-146.30h.

Beyer, Rolf R.: *See—*
Goetze, Gerhard W.; and Beyer, Rolf R., 3,735,032.

Bickford, Harry G.; Kieny, Leonard A., Jr.; and Peltier, Lewis G., Jr., to International Business Machines Corporation. Surface characterization. 3,733,893, Cl. 73-73.000.

Bieber, George F.: *See—*
Kearney, Thomas J.; and Bieber, George F., 3,733,710.

Bienert, Klaus; Lang, Winfried; and Nordt, Egon, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H. Treated quartz vessels for use in producing and further processing III-V semiconductor bodies low in silicon. 3,734,817, Cl. 161-192.000.

Biland, Hans Rudolf: *See—*
Dunnenberger, Max; and Biland, Hans Rudolf, 3,734,884.

Bilhorn, John M.; Bergum, Bernard C.; and Anderson, Kent V., to ESB Incorporated. Flat cell battery with both terminals on one face. 3,734,780, Cl. 136-111.000.

Billi, G., & C. S.p.A.: *See—*
Gasparri, Mario, 3,733,858.

Bilton, John, to Fluidrive Engineering Company, Limited. Scoop-trimmed fluid couplings. 3,733,821, Cl. 60-351.000.

Biomarine Industries, Inc.: *See—*
Soult, Charles J., 3,735,382.

Biorex Laboratories Limited: *See—*
Turner, John Cameron, 3,734,944.

Birch, Richard J.: *See—*
Willis, Frederick Gordon, Jr., 3,733,616.

Birkholtz, Gottfried, to Schenck, Carl, Maschinenfabrik GmbH, Firma. Device for compensating elastic after-effects or creeping. 3,735,320, Cl. 338-2.000.

Bishop Freeman Company: *See—*
Davis, Harvey L., 3,733,724.

Biskis, Edward G., to Air Products and Chemicals, Inc. Thermoelectric adsorber. 3,734,293, Cl. 210-185.000.

Blach, Heribert: *See—*
Blach, Joseph; and Blach, Heribert, 3,734,635.

Blach, Joseph; and Blach, Heribert. Shaft in particular screw shaft for feeding or kneading of raw materials by example synthetic material. 3,734,635, Cl. 415-72.000.

Black and Decker Manufacturing Company, The: *See—*
Brucker, William S., 3,733,663.
Sauerwein, William D.; Meloni, Robert A.; and Walter, Harvey J., 3,734,459.

Black Clawson Company, The: *See—*
Bennett, Weston T.; Coveney, Donald B.; Lamb, Charles A.; and Hanson, Jonathan Leslie, 3,734,822.
Harmon, Paul E.; and Mainstone, Kenneth A., 3,734,662.

Black Engineering, Inc.: *See—*
Hirschfeld, Tomas, 3,734,769.

Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories, Limited. Carboxamidines. 3,734,924, Cl. 260-309.000.

Blackburn, Denis Edward: *See—*
Rhodes, Arthur Neville; and Blackburn, Denis Edward, 3,734,431.

Blackburn, Richard D.: *See—*
Downs, Clifford L.; and Blackburn, Richard D., 3,735,243.

Blackwell, Lyman L., to Central Investment Corporation. Circuit for detection of small resistance changes ionization chamber devices. 3,735,375, Cl. 340-237.00s.

Blair, George R.; and Ricaud, Francois J., to Hughes Aircraft Company. Method of hardening polished aluminum surfaces. 3,734,837, Cl. 204-36.000.

Blancett, Joe H. Clock for meters. 3,735,102, Cl. 235-94.00r.

Blasch, Earl B.; Klingaman, Richard M.; and Page, Daniel M., to United States of America, Army, mesne. Compacted and sintered powder mass having a discrete cavity in the mass and method of forming. 3,734,723, Cl. 75-214.000.

Blatt, Leland F. Travel cylinder and gripper actuator with triple guide rods. 3,734,303, Cl. 214-1.0bb.

Blecha, Dennis Leonard, to Du Pont de Nemours, E. I., and Company. Two-stage uniaxial orientation of polyethylene terephthalate films. 3,734,994, Cl. 264-288.000.

Bletz, Howard W., to Therm-O-Disc, Incorporated. Adjustable thermostat. 3,735,319, Cl. 337-347.000.

Blevio, Henry L. Apparatus for adhering and interlocking mitered molding strips to a panel. 3,734,381, Cl. 227-148.000.

Bliss-Hill, Herbert Brian; and Tewsley, Eric William, to Stibbe Machinery Limited. Electronically controlled needle selection system for knitting machines. 3,733,855, Cl. 66-50.00r.

Blocher, Hans-Joachim: *See—*
Bosch, Lothar; and Blocher, Hans-Joachim, 3,735,174.

Blocher Motor KG, Firma: *See—*
Bosch, Lothar; and Blocher, Hans-Joachim, 3,735,174.

Blohm, Arthur M. Machine aligning device. 3,733,706, Cl. 33-180.00r.

Blomgren, Oscar C., Jr., to Inter-Probe, Inc. Method and apparatus for removing heat from within a vacuum and from within a mass. 3,735,175, Cl. 313-60.000.

Bloom, Leonard: *See—*
Rebold, Jerome I., 3,734,282.

Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, to United States of America, Air Force. Nanosecond pulse modulator. 3,735,146, Cl. 307-106.000.

Bloxham, Alden T.; and Fischer, Harry C., to Kellogg-America, Inc. Heat exchanger for compressed air. 3,734,174, Cl. 165-154.000.

Bly, Vincent T., to United States of America, Army. Large, two dimension, screen for converting an optical image projected on one side to an identical infrared image display on the other side. 3,735,137, Cl. 250-83.3hp.

Boatwright, John T., to Northeast Electronics Corporation. Digital analysis of electric wave signals. 3,735,263, Cl. 324-i86.000.

Bock, John W.; and Sivertsen, Marvin L., to General Electric Company. Diaphragm-type high speed spot film device. 3,735,130, Cl. 250-66.000.

Bock, Rudolf. Hydraulically actuated cutting machine for rods and the like. 3,733,699, Cl. 30-180.000.

Bock, Willy: *See—*
Schneider, Theodor; Bock, Willy; and Schubert, Karl-Friedrich, 3,733,913.

Bodor, Nicolae Stefan: *See—*

Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.

Boeing Company, The: *See—*
McDonald, Glen L., 3,735,158.
Whetham, William J., 3,735,157.

Bohannon, William D., Jr.; and Church, Hoye D., to Western Electric Company, Incorporated. Apparatus for automatically inserting components in a workpiece. 3,733,672, Cl. 29-203.00b.

Bolinger, John F.; and Kolster, Wilhelm K.; deceased (by Kolster, Christel E.; executrix), to Meridian Industries, Inc. Flasher circuit with outage indication. 3,735,196, Cl. 315-200.00a.

Bolt, Durk Jan; and Reitsma, Jogchum, to U.S. Philips Corporation. Coded decimal divider with pre-conditioning of division. 3,735,107, Cl. 235-159.000.

Bolt, Durk Jan; and Reitsma, Jogchum, to U.S. Philips Corporation. Coded decimal non-restoring divider. 3,735,108, Cl. 235-159.000.

Bolton, Douglas R., to Cadaco, Inc. Magnetic game structure. 3,734,502, Cl. 273-95.00r.

Bolton-Emerson Inc.: *See—*
Danforth, Donald W., 3,733,888.

Bonazoli, Robert P.; and Keenan, James P., to Sylvania Electric Proudcts, Inc. Lamp assembly. 3,735,185, Cl. 313-278.000.

Bone, Arnold R.; and Krohn, Ronald W., to Dennison Manufacturing Company. Fastener inserting machine. 3,734,375, Cl. 227-67.000.

Bonis, David Raynes; and Foster, Eric, to Northern Electric Company Limited. Electrically conducting pivotal joint. 3,735,021, Cl. 174-86.000.

Bonner, Joseph A.: *See—*
Evans, Howard J.; Lofink, Joseph P.; and Bonner, Joseph A., 3,733,910.

Bonner, Joseph A.; and Evans, Howard J., to Rockwell Manufacturing Company. Temperature compensated gas meter register. 3,733,904, Cl. 73-233.000.

Bonteil, Robert C., to Matsushita Electric Works, Ltd. Lyophilisation installation. 3,733,716, Cl. 34-92.000.

Borden, A. Gale. Waste disposal assembly. 3,734,852, Cl. 210-152.000.

Borden, Inc.: *See—*
Dooley, Donald David, 3,734,798.

Borg-Warner Corporation: *See—*
Stanley, Marland L.; and Reich, Allen D., 3,733,887.

Borghese, Marco, to Wagman, N., & Company, Inc. Capless wig. 3,734,105, Cl. 132-53.000.

Bories, Jacques Elie, to Agfa-Gevaert N.V. Colour radiography. 3,734,735, Cl. 96-55.000.

Borror, Alan L., to Polaroid Corporation. Silver halide emulsions sensitized with cyanic dyes containing a quaternary group. 3,734,739, Cl. 96-132.000.

Borutta, Robert A.; and Koenig, Elmer A., to Sherwood Medical Industries, Inc. Manual syringe filling apparatus. 3,734,147, Cl. 141-27.000.

Bosch, Lothar; and Blocher, Hans-Joachim, to Gesellschaft Kernforschung m.b.H. and Blocher Motor KG, Firma. Electric motor with hollow rotor and method of fabricating the hollow rotor. 3,735,174, Cl. 310-266.000.

Bosch, Paul, to Bosch, Robert, G.m.b.H. Axial piston machine with adjustable swash plate. 3,733,970, Cl. 91-506.000.

Bosch, Robert, G.m.b.H.: *See—*
Bosch, Paul, 3,733,970.
Eckert, Konrad, 3,735,302.
Glockler, Otto; Schmid, Hermann; and Eichler, Dieter, 3,734,067.
Kobald, Walter; and Reichel, Eckehart, 3,734,225.
Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, 3,735,220.

Bosund, Sven Ingmar Walton: *See—*
Bengtsson, Bengt Lennart; Bosund, Sven Ingmar Walton; and Hylmo, Bertil, 3,734,751.

Bosyk, William, to Package Machinery Company. Solenoid operated door opener for plastic molding machines. 3,734,664, Cl. 425-151.000.

Bottomley, Robert Richard: *See—*
Schillinger, Joseph F.; and Bottomley, Robert Richard, 3,734,284.

Botz, Roland, to Plasti-fiber formulations, Inc. Bagasse fiber product and process. 3,734,766, Cl. 117-100.00a.

Boul, Pierre Germain R.: *See—*
Berthelemy, Jacques; Boul, Pierre Germain R.; and Sauvan, Jacques Louis, 3,735,109.

Bourns, Inc.: *See—*
Frey, Sydney W., Jr.; and Gaines, Robert W., 3,733,695.

Bouwhuis, Gijsbertus; Haans, Petrus Franciscus Antonius; and Peek, Theodorus Hendrikus, to U.S. Philips Corporation. Gas discharge laser. 3,735,281, Cl. 331-94.500.

Bovenkerk, Harold P., to General Electric Company. Thermistor. 3,735,321, Cl. 338-22.00r.

Bowen, Jonathan L.; and Dexter, Theodore H., to Hooker Chemical Corporation. Cleaning compositions. 3,734,860, Cl. 252-158.000.

Bowers, Russell E.; and Warpenburg, Norman L., to Avco Corporation. Sequentially interlocked arming device. 3,734,022, Cl. 102-78.000.

Bowmar Instrument Corporation: *See—*
Harden, Phillip L., 3,735,303.

Brabander, Herbert Joseph: *See—*
Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, 3,734,915.
Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, 3,734,916.

Bradley, Deward C., to CTS Corporation. Piezoelectric crystal assembly. 3,735,166, Cl. 310-9.400.

Bradley, John J., to Paper Converting Machine Company, Inc. Noise reduction strip for shear cut perforator. 3,733,949, Cl. 83-348.000.

Bradshaw, William L., to Dow Chemical Company, The. Magnesium-magnesium chloride bath separation. 3,734,718, Cl. 75-63.000.

Brainard, Allan H.: *See—*
Fitzgibbons, William O.; Schwerko, Elaine M.; and Brainard, Allan H., 3,734,943.

Brandinger, Jay Jerome, to RCA Corporation. Television camera system with enhanced frequency response. 3,735,033, Cl. 178-5.4st.

Brandt, Siegfried: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,734,887.

Brandt, Thomas F., Jr.; and Netzel, Philip C., to I-T-E Imperial Corporation. Low profile circuit breaker with staggered terminals. 3,735,065, Cl. 200-50.0aa.

Branson Instruments Incorporated: *See—*
Obeda, Edward G.; and Parry, Frank, 3,734,805.

Bratschitsch, John, to Lely Corporation, The. Applying a preservative to grain or the like. 3,734,777, Cl. 134-132.000.

Brauer, Edwin Henry. Automatic press brake back gauge. 3,733,885, Cl. 72-461.000.

Braun, Bernard G., to Case, J. I., Company. Control system for fluid cylinder. 3,733,965, Cl. 91-275.000.

Bravi, Jean-Claude; Poulain, Claude; and Viallet, Claude, to Societe Anonyme dite: Aquitaine Total Organico. Process to improve the efficiency of photochemical reactions. 3,734,845, Cl. 204-162.0xm.

Bray, Douglas: *See—*
Porter, David H.; Kemmerer, Wayne; and Bray, Douglas, 3,735,123.

Bredoux, Francois Jean-Marie; Mercier, Claude Andre; and Phlipot, Georges Achille, to Eastman Kodak Company. Neutron detector of the track-damage type. 3,735,135, Cl. 250-83.100.

Bremer, Norman C. Chemical thermometer and holder. 3,733,905, Cl. 73-356.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Target and adjustable trajectory disc launcher. 3,734,503, Cl. 273-101.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Simultaneous launching game. 3,734,504, Cl. 273-126.00r.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Matching answer game. 3,734,510, Cl. 273-152.00r.

Brettenbach, Otto, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. High frequency cable. 3,735,293, Cl. 333-84.00r.

Bricmont & Associates, Inc.: *See—*
Bricmont, Francis H., 3,734,834.

Bricmont, Francis H., to Bricmont & Associates, Inc. Apparatus and method for applying a foam coating to ejected hot coke. 3,734,834, Cl. 201-39.000.

Bridgford, Hugh H. Automatically opening frozen dough box and baking pan. 3,734,749, Cl. 99-172.000.

Briggs, Walton Ellis, to Varian Associates. Valve structure for collecting multiple samples. 3,733,907, Cl. 73-421.50r.

Bristol-Myers Company: *See—*
Crast, Leonard Bruce, Jr., 3,734,907.
Lapidus, Herbert; and Mackles, Leonard, 3,735,007.

British Aircraft Corporation Limited: *See—*
Ransom, Stephen, 3,734,430.
Rhodes, Arthur Neville; and Blackburn, Denis Edward, 3,734,431.

British Oxygen Company Limited, The: *See—*
Lobb, Alexander James, 3,733,837.

British Steel Piling Company Limited, The: *See—*
Last, Anthony Edward Walter, 3,734,206.

Britton, Orson J., to Sybron Corporation. Scratch proof probe for manual testing of electrically insulating coatings. 3,735,251, Cl. 324-54.000.

Brockmuller, Ingo, to EMA AG. Electrical oscillating servo motor control circuit arrangement. 3,735,229, Cl. 318-611.000.

Brodrene Gram A/S: *See—*
Gram, Hans, 3,733,846.

Brooks, Paul, Jr.; and Tetters, Clarence O. Mounting step for automotive vehicle. 3,734,534, Cl. 280-163.000.

Brown & Root, Inc.: *See—*
Morgan, William A., 3,733,676.

Brown, Arthur King, Jr., to Bendix Corporation, The. Hydraulic power brake booster. 3,733,966, Cl. 91-372.000.

Brown Boveri-Sulzer Turbomachinery Limited: *See—*
Strub, Rene, 3,734,645.

Brown, Byron T.; and Stahmer, B. Oil or like transportation system and pipeline support. 3,734,138, Cl. 138-106.000.

Brown, Carlton E., to Lear Siegler, Inc. Slot diffuser. 3,733,995, Cl. 98-40.00d.

Brown, Ced F., 1/2 to Torosian, Mike. Catch basin cleaning system and method. 3,734,775, Cl. 134-10.000.

Brown Company: *See—*
Buttery, Kenneth T.; and Haas, Richard G., 3,734,390.

Brown, David, Tractors Limited: *See—*
Ashfield, Herbert Edward, 3,734,259.

Brown, Donald G., to United States of America, Air Force. Rocket chamber and injector segmentation and supersonic. 3,733,828, Cl. 60-258.000.

Brown, Frank: *See—*

Wickham, William T.; Brown, Frank; Kleykamp, Donald L.; and Kossuth, Otto, 3,733,697.

Brown, Lloyd H.; and Eftax, Daniel S. P., to Quaker Oats Company, The. Process of producing a foundry core composition. 3,734,936, Cl. 260-39.0sb.

Brown, Philip H., to Inland Container Corporation. Package corner post. 3,734,389, Cl. 229-14.00c.

Brown, Richard L., to Midway Manufacturing Company. Apparatus for simulating cross-country driving conditions. 3,734,497, Cl. 273-1.00e.

Brown, Roland Clough. Instant dial-a-flow cap. 3,734,360, Cl. 222-537.000.

Brown, S. G., Limited: *See*—
Adams, John, 3,734,483.

Brown, William Henry. Apparatus for stripping fluid from well pipe. 3,733,641, Cl. 15-210.00b.

Brown, William W.; Loose, Robert A.; and Vogel, John A., to Westinghouse Electric Corporation. Nuclear reactor loop reactivation system. 3,734,823, Cl. 176-26.000.

Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., to Sterigard Corporation. Pressurized container dispensing valve having excessive pressure safety feature. 3,734,125, Cl. 137-495.000.

Brucker, Henry J.; Brucker, Robert J.; and Klausmann, Milton H., to Seal-Spout Corporation. Pouring spout lock. 3,734,361, Cl. 222-556.000.

Brucker, Robert J.: *See*—
Brucker, Henry J.; Brucker, Robert J.; and Klausmann, Milton H., 3,734,361.

Brucker, William S., to Black and Decker Manufacturing Company, The. Corner shaping tool. 3,733,663, Cl. 29-78.00r.

Bruene, Warren B., to Collins Radio Company. Transmitter combiner having coupled tuned circuits. 3,735,289, Cl. 333-5.000.

Brummet, Paul L.; and Isley, Sigmund G., to Amerel Company, Inc. Intra-factory system and method for utilizing powered and free conveyor systems. 3,734,027, Cl. 104-172.00s.

Bruneau, Louis O., to Polaroid Corporation. Photograhpic cassette loading. 3,733,679, Cl. 29-431.000.

Brunetti, Heimo: *See*—
Muller, Helmut; Rosenberger, Siegfrid; and Brunetti, Heimo, 3,734,885.

Brunnmueller, Friedrich: *See*—
Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, 3,734,951.

Bruno, Leonard, to Stanadyne, Inc. Pulsating spray head. 3,734,410, Cl. 239-102.000.

Bryan, Anthony G., to Motorola, Inc. Compensated crosspoint switching system. 3,735,057, Cl. 179-186.00f.

Bryson, Robert A.; Kennicott, Thomas C.; and Sarring, Ernest J., to Harris-Intertype Corporation. Book trimming machine. 3,733,947, Cl. 83-280.000.

Bucalo, Brian D. Toilet paper roll having a cleansing composition. 3,734,277, Cl. 206-58.000.

Buchanan, Chester L., to United States of America, Navy. Lens protective system for deep sea camera. 3,733,981, Cl. 95-11.0uw.

Buchanan, William Michaux; and Madures, John W., to Morris, Philip, Incorporated. Method for expanding tobacco stems. 3,734,104, Cl. 131-140.00p.

Buchner, Robert Bertold; and Maat, Jan Philippus, to U.S. Philips Corporation. Telecommunication system with time division multiplex. 3,735,049, Cl. 179-15.0aq.

Buckley, Stanley G., to Dunlop Holdings Limited. Air cooled brake assembly. 3,734,247, Cl. 188-264.00a.

Bucklin, James B.; and Utken, Jay, to Mallory, P. R., & Co., Inc. Fusing resistor. 3,735,318, Cl. 337-296.000.

Bucyrus-Erie Company: *See*—
Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,209.
Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,211.
Otto, George E., 3,734,208.
Perlewitz, Ralph L., 3,734,212.

Budd, Wilbert H.: *See*—
Rozema, Arthur L.; Budd, Wilbert H.; and Kelver, William L., 3,735,327.

Bullard, Russell H.: *See*—
Ares, Roland A.; Bullard, Russell H.; and Spear, Ernest L., 3,734,171.

Bunker-Ramo Corporation, The: *See*—
Kaczmarek, Leonard J., 3,733,883.

Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen. Polyurethane foams produced from nitrogenous polyethers. 3,734,871, Cl. 260-2.5aq.

Burenga, Thomas I.; and Elliott, Everett, to TSC Industries, Inc. Rotary roller pumps. 3,734,654, Cl. 418-152.000.

Burger, Harry Fred, to Walworth Company. Gate valve with thin walled hubs. 3,734,461, Cl. 251-366.000.

Burger, Philip M.; and Carson, David E., to Carson & Burger, Incorporated. Lid orienting assembly. 3,734,268, Cl. 198-33.0ad.

Burgholte, Alwin: *See*—
Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, 3,735,220.

Burklund, Vernon D.: *See*—
Rentz, Albert W.; Jackson, Lloyd J.; Willard, Robert C.; and Burklund, Vernon D., 3,734,019.

Burnett, George R.; and Burnett, Jessie E. Low pressure control switch with bridging contacts. 3,735,071, Cl. 200-83.00j.

Burnett, Jessie E.: *See*—
Burnett, George R.; and Burnett, Jessie E., 3,735,071.

Burney, Ivan T., to Westinghouse Electric Corporation. Electrostatic precipitator. 3,733,783, Cl. 55-104.000.

Burns, Mark T. Prefabricated structure adapted to be attached to a vehicle top. 3,734,110, Cl. 135-1.00a.

Burns, Tom V., to Amex Phosphates, Inc. Method for making ammonium phosphate fertilizer. 3,734,708, Cl. 71-34.000.

Burrough, Donald E.: *See*—
Wood, William Robert; and Burrough, Donald E., 3,733,796.

Burroughs Corporation: *See*—
Balogh, Edward, Jr.; and Cook, Darwen J., 3,735,355.
Beers, Leroy Walter; and De Santis, Alfred John, 3,735,363.
Beery, Jack; and Templeton, William B., 3,734,491.
Shukla, Narendra M., 3,735,153.
Williams, Richard M., 3,734,011.

Burroughs, Elvin O. Air actuated truck-trailer hitch. 3,734,541, Cl. 280-506.000.

Bursa, Stanislaw: *See*—
Pischinger, Ernest; Bursa, Stanislaw; Koneczny, Henryk; and Straszko, Jerzy, 3,734,709.

Burton, James R. Detachable dinghy or tender for sail boats. 3,734,047, Cl. 114-39.000.

Bush, Robert E.: *See*—
Degelleke, Gerrit; and Bush, Robert E., 3,734,307.

Bushnell, Sherman W., Jr. Control system for multi-stage lift. 3,734,464, Cl. 254-93.00r.

Buss A.G.: *See*—
Franz, Peter; and Maier, Andreas, 3,734,415.

Butler, David R., to Loewy, Raymond and Snaith, William, Inc. Bracket standard and base rail system. 3,733,755, Cl. 52-36.000.

Butler, John Francis; Jordan, John William; and Orbeck, Finn, to Doxford and Sunderland Limited. Opposed piston two-stroke cycle internal combustion engines. 3,734,074, Cl. 123-119.0cb.

Butler, R. B., Inc.: *See*—
Wallace, James L., 3,734,204.

Buttery, Kenneth T.; and Haas, Richard G., to Brown Company. Front-opening carton with unique end flap arrangement. 3,734,390, Cl. 229-27.000.

Byers, Clifton A., to Goodyear Tire & Rubber Company, The. Carbon disk quality processing. 3,734,797, Cl. 156-253.000.

Byers, Edward Victor. Orrery. 3,733,720, Cl. 35-45.000.

Byrd, Lucid Lincoln, to Carter Precision Electric Company. Electrical switch assembly. 3,735,061, Cl. 200-16.00r.

Bysouth, Raymond: *See*—
Robertson, Peter Struan; Bysouth, Raymond; and New Zealand Dairy Research Institute, 3,733,702.

Cabaniss, Julian C. Machine for handling aircraft brake assemblies. 3,734,304, Cl. 214-1.0bd.

Cadaco, Inc.: *See*—
Bolton, Douglas R., 3,734,502.

Cade, Paul E., to International Business Machines Corporation. Multiple bank atomic absorption apparatus for simultaneously measuring different physical parameters of a material. 3,734,620, Cl. 356-73.000.

Calcagno, Benedetto; and Piccolo, Luigi, to Societa Italiana Resine S.p.A. Process for preparing titanium dioxide. 3,735,000, Cl. 423-613.000.

Calgon Corporation: *See*—
Hoover, Merwin Frederick; and Sinkovitz, Gloria Dimarco, 3,734,820.
Sawyer, Ernest Robert, 3,734,855.

Calinog, Teodoro A. Multipurpose esophageal instrument. 3,734,094, Cl. 128-2.06e.

Calor: *See*—
Trouilhet, Maurice Marie Achille, 3,733,725.

Calsilox S.A.: *See*—
Vrijma, Berend, 3,734,991.

Camis, Thomas; and Goss, Steven A., to Xerox Corporation. Single pass duplexing by sequential transfer. 3,734,015, Cl. 101-229.000.

Campbell, David D., to General Motors Corporation. Servomotor. 3,733,972, Cl. 92-37.000.

Campbell, Willis H., to Monsanto Company. Process for making monocrystalline silicon. 3,734,695, Cl. 23-301.0sp.

Canadian General Electric Company Limited: *See*—
Eastcott, Peter de Hertel; Messervey, William Albert; and Wyeth, William Albert, 3,734,257.

Canadian International Paper Company: *See*—
Gupta, Virendra N.; and Lafond, Renald L., 3,734,683.

Canadian Patents and Development Limited: *See*—
Hulme, Michael Anthony, 3,734,831.
Wiles, David M.; and Suprunchuk, Tony, 3,734,757.

Canavan, John J.: *See*—
Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., 3,734,983.

Cancilla, Edward; and Lanahan, Bernard E., to Ace Tank and Heater Company. Boiler. 3,734,064, Cl. 122-136.00r.

Canon Kabushiki Kaiska: *See*—
Tanaka, Hiroshi; and Takahashi, Shinkichi, 3,734,609.

Cantagallo, Raymond E.; and Lutz, Robert J., to Sun Shipbuilding & Dry Dock Company. Apparatus for transportation of commodities. 3,733,849, Cl. 62-414.000.

Cantarutti, Armindo, to NRM Corporation. Tire shaping curing device. 3,734,655, Cl. 425-33.000.
Canteen Corporation, mesne: *See—*
Pearl, Donald C.; and Gross, Arthur P., 3,733,840.
Cantral, John Isaac, to Deere & Company. Side draft control system for a tractor and earth-working implement. 3,734,195, Cl. 172-7.000.
Cappotto, Samuel D.: *See—*
Doll, Peter A.; Cappotto, Samuel D.; Diamond, Herrick R.; and Lohr, Ernest F., 3,734,262.
Carborundum Company, The: *See—*
Parris, John L., 3,734,305.
Carbrey, Robert L., to Bell Telephone Laboratories, Incorporated. Self companding pulse code modulation systems. 3,735,393, Cl. 340-347.0da.
Carden, Charles A. Splash guard for scrubbing machines. 3,733,635, Cl. 15-49.00r.
Cardinal Petroleum Company: *See—*
Warren, Herbert G.; and Ragland, Ronald D., 3,734,182.
Cardoza, Clarence Anthony: *See—*
Anderson, Charles Elmor; and Cardoza, Clarence Anthony, 3,735,188.
Carey, Donald F.: *See—*
Leonard, Richard L.; and Carey, Donald F., 3,734,989.
Carls, Billy F.; and Bell, Paul R. Storage of histology specimens. 3,733,768, Cl. 53-25.000.
Carlson, Allen W.: *See—*
Danzig, Meyer H.; and Carlson, Allen W., 3,734,806.
Carlson, Ronald H., to Hooker Chemical Corporation. Synergistic metal sequestrant. 3,734,861, Cl. 252-180.000.
Caron, Marcel: *See—*
Benner, Jean-Rene; Dop, Pierre; and Caron, Marcel, 3,735,300.
Carr, Russell L. K.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., 3,734,976.
Carrier Corporation: *See—*
Leonard, Louis H., Jr., 3,734,636.
Leonard, Louis H., Jr., 3,734,651.
MacLeod, David E., 3,733,843.
Carson & Burger, Incorporated: *See—*
Burger, Philip M.; and Carson, David E., 3,734,268.
Carson, David E.: *See—*
Burger, Philip M.; and Carson, David E., 3,734,268.
Carswell, Firman L., Manufacturing Company, The: *See—*
Schmidt, Otto W.; and Schmidt, Richard O., 3,734,046.
Carter, Neil E.: *See—*
Russell, John Duncan; and Carter, Neil E., 3,734,417.
Carter Precision Electric Company: *See—*
Byrd, Lucid Lincoln, 3,735,061.
Carter, Rex D., to Sheller-Globe Corporation. Support for suspended files. 3,734,300, Cl. 211-177.000.
Carter, Thomas A., Jr.: *See—*
Duron, Paul P.; Carter, Thomas A., Jr.; and Mondok, Frank, 3,733,848.
Cartmell, James V.: *See—*
Churchill, Donald; and Cartmell, James V., 3,734,597.
Cartwright, William J., to Continental Can Company, Inc. Method of and apparatus for assembling internesting members. 3,733,680, Cl. 29-429.000.
Carugati, Vitaliano: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,735,132.
Carveth, William H. Reinforced plastic gear. 3,733,921, Cl. 74-439.000.
Case, J. I., Company: *See—*
Braun, Bernard G., 3,733,965.
Redenbarger, Philip D., 3,734,320.
Casper, Clarence, Jr.: *See—*
Games, John E.; and Casper, Clarence, Jr., 3,735,391.
Casper, Karl J., to Reuter-Stokes Electronic Components, Inc. Method and apparatus for testing rock coal dust. 3,735,126, Cl. 250-43.50d.
Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., to General Foods Corporation. Multi-layered, multi-colored desserts. 3,734,745, Cl. 99-130.000.
Casto, John P., to Textron Inc. Trench duct end closure. 3,733,761, Cl. 52-220.000.
Celanese Corporation: *See—*
Powanda, Thomas M., 3,734,890.
Vona, Joseph A.; Holzman, Lawrence B.; and Tracy, James E., 3,734,879.
Centner, Ronald M.; and Kamm, Vernon C., to Bendix Corporation, The. Coordinate determining device employing a slowly varying difference signal to determine approximate cursor position. 3,735,044, Cl. 178-18.000.
Central Investment Corporation: *See—*
Blackwell, Lyman L., 3,735,375.
Centre Electronique Horloger SA: *See—*
Nikles, Francois; and Besson, Rene, 3,733,917.
Ceskoslovenska akademie ved: *See—*
Stoy, Arthur, 3,734,897.
Chafetz, Harry: *See—*
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,734,955.
Champion International Corporation: *See—*
Schillinger, Joseph F.; and Bottomley, Robert Richard, 3,734,284.
Chandler Evans Inc.: *See—*
Nash, John E.; and Grennan, Charles W., 3,733,816.
Chang, Robert C. C.: *See—*
Bachofer, Henry L.; and Chang, Robert C. C., 3,735,224.
Charest, Bernard: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,735,146.
Chase-Shawmut Company, The: *See—*
Jacobs, Philip C., Jr., 3,735,317.
Chaturvedi, Yogesh Chand. Preparation of methyl-β-phenyl-ethyl-ether. 3,734,970, Cl. 260-611.00a.
Cheale, Leonard Frederick: *See—*
Mayhew, Antony James; and Cheale, Leonard Frederick, 3,734,616.
Cheek, Forrest R.: *See—*
Annis, Robert E.; and Cheek, Forrest R., 3,734,251.
Cheese vats: *See—*
Robertson, Peter Struan; Bysouth, Raymond; and New Zealand Dairy Research Institute, 3,733,702.
Chemische Werke Huls Aktiengesellschaft: *See—*
Pfeiffer, Kurt; Dietrich, Johannes; Schonberg, Karl-Heinz; and Beckmann, Gunter, 3,734,400.
Chen, Chung C., to Du Pont de Nemours, E. I., and Company. Diquinolonopyridone. 3,734,920, Cl. 260-295.00r.
Cheng, David Chung-Hsun; and Davis, John Brian, to National Research Development Corporation. Mixing devices. 3,734,468, Cl. 259-6.000.
Chestnut, Benjamin F.; and Wiser, Joseph E., to Mallory, P. R., & Co., Inc. Extended cycle timer with momentary switch. 3,735,062, Cl. 200-38.00r.
Chevron Research Company: *See—*
Olund, Sven A., 3,733,850.
Chia, Enrique C.; Ward, George C.; and Lenaeus, George E., to Southwire Company. Method of continuously casting metals. 3,734,162, Cl. 164-87.000.
Chibata, Ichiro; Kisumi, Masahiko; Kato, Jyoji; and Sugiura, Masaki, to Tanabe Seiyaku Co., Ltd. Fermentative preparation of L-arginine. 3,734,829, Cl. 195-29.000.
Chicago Bridge & Iron Company: *See—*
Delahunty, Terry Wayne, 3,733,838.
Christensen, Donald W., to Young Radiator Company. Heat exchanger. 3,734,175, Cl. 165-158.000.
Christensen, Frank G.; and Wulff, Rafael T., 1/3 to Lapin, Zeverly L. Steering system for snowmobiles and the like. 3,734,219, Cl. 180-5.00r.
Christensen, Roland S.; and Heider, Stanley A. Commutator for D.C. machines. 3,735,170, Cl. 310-219.000.
Christie, George, Jr., to General Electric Company. Flame retardant composition. 3,734,877, Cl. 260-37.0sb.
Chrysler Corporation: *See—*
Eshelman, Robert W.; and Ohar, Waysl, 3,734,403.
Pace, John G., 3,734,170.
Chu, Nan S., to Union Carbide Corporation. Cross-linked polyalkalene oxide. 3,734,876, Cl. 260-33.60r.
Church, Donald E.: *See—*
Lane, Buddy F.; and Church, Donald E., 3,735,343.
Church, Hoye D.: *See—*
Bohannon, William D., Jr.; and Church, Hoye D., 3,733,672.
Church, Peter K.; and Knutson, Oliver J., to Kaman Sciences Corporation, mesne. Ceramic treating process and product produced thereby. 3,734,767, Cl. 117-123.00b.
Churchill, Donald; and Cartmell, James V., to National Cash Register Company, The. Process for producing a color state in a display device. 3,734,597, Cl. 350-160.0lc.
Chvertko, Anatoly Ivanovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Reznitsky, Kommunarsk; and Pilipchuk, Viktor Romanovich, 3,734,165.
Ciba Limited: *See—*
Lukaszczyk, Alfons; and Pissiotas, Georg, 3,734,710.
Ciba-Geigy AG: *See—*
Dunnenberger, Max; and Biland, Hans Rudolf, 3,734,884.
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,734,934.
Ciba-Geigy Corporation: *See—*
Holt, Brian, 3,734,883.
Lamb, Frank, 3,734,796.
Muller, Helmut; Rosenberger, Siegfrid; and Brunetti, Heimo, 3,734,885.
Varsanyi, Denis; and Roth, Willy, 3,734,909.
Ciccarelli, William E.; and Kaufman, Phillip A., to Gichner Mobile Systems, Inc. Shock skid assemblies for shelter units. 3,734,524, Cl. 280-25.000.
Ciccone, Thomas Q.; and Visnov, Martin, to United States of America, Army. Igniter for propelling charges. 3,734,020, Cl. 102-40.000.
Cimarosti, Giordano: *See—*
Bertoni, Luigi; Pizzamiglio, Giancarlo; Fava, Renato; and Cimarosti, Giordano, 3,734,848.
Cipriani, Domenico: *See—*
Balke, Roy Leonard; and Cipriani, Domenico, 3,735,169.
Cities Service Company: *See—*
Bendzick, Marvin F., 3,734,595.
Crosson, William J., 3,734,446.
Cities Service Oil Company: *See—*
Aldrich, Charles A.; and Land, Karl M., 3,735,338.

Rhoades, Vaughan W., 3,734,180.
Scott, J. O., 3,734,184.
Shepherd, Floyd, Jr., 3,734,232.
Citizens Watch Co., Ltd.: *See—*
Hiraga, Michio; and Yoshida, Makoto, 3,733,803.
Clairol Incorporated: *See—*
Golbe, Alvin Victor, 3,733,634.
McIlhenny, Dudley F., 3,734,353.
Claren, Otto Bernd: *See—*
Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, 3,734,951.
Clark, Burton P.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,733,960.
Clark, Donald E.: *See—*
Wendt, Gerhard R.; Clark, Donald E.; and Grant, Norman H., 3,734,904.
Clark Equipment Company: *See—*
Hartline, Rolland L.; and Kramer, Charles E., 3,735,260.
Clark, Frank E., to Container Corporation of America. Multi-wall container. 3,734,392, Cl. 229-34.000.
Clark, James M., to International Telephone and Telegraph Corporation. Frame synchronization system for a digital communication system. 3,735,045, Cl. 178-69.50r.
Clarkson, Frederick C., Jr., to General Motors Corporation. Automatic setting motion-sensing control device. 3,734,460, Cl. 251-321.000.
Claude, Henault, to Regie Nationale des Usines Renault et Societe dite des Automobiles Peugeot. Depollution gases. 3,733,829, Cl. 60-289.000.
Clemens, Philip M. Resilient pad for use on footwear. 3,733,721, Cl. 36-32.00r.
Clement, Ralph C., to I-T-E Imperial Corporation. Voidable cover interlock. 3,735,064, Cl. 200-50.00a.
Clevesak Corporation: *See—*
Stump, Paul W., 3,734,393.
Clifford, Richard P., to TRW Inc. Electrostatic control method and apparatus. 3,734,172, Cl. 165-96.000.
Cline, Gina L.: *See—*
Ludwig, Milton, 3,733,834.
Clothes-peg: *See—*
Stalder, Fred, 3,733,656.
Clymer, Gary C.: *See—*
Sawmiller, Niles E.; Clymer, Gary C.; and Clymer, Larry R., 3,734,518.
Clymer, Larry R.: *See—*
Sawmiller, Niles E.; Clymer, Gary C.; and Clymer, Larry R., 3,734,518.
Coates, William M.: *See—*
Corrigan, John R.; and Coates, William M., 3,734,917.
Coccagna, Edmund G., to Mohawk Data Sciences Corporation. Seven or nine channel readout with adjustable threshold. 3,735,372, Cl. 340-174.10h.
Coccia, Rudolph A., to Westinghouse Air Brake Company. Electro-pneumatic brake system. 3,734,571, Cl. 303-20.000.
Cohen, Charles I., to Owens-Corning Fiberglas Corporation. Apparatus for leaching glass films. 3,734,802, Cl. 156-345.000.
Cohn, H. Marvin. Reinforced strap holder. 3,733,631, Cl. 9-340.000.
Coho, Owen C.; and General Electric Company, to Reaction rail pretension method. . 3,733,669, Cl. 29-155.000.
Coilcraft Inc.: *See—*
Renskers, John O.; and Jensen, Charles E., 3,735,214.
Colbert, John R.: *See—*
Perkins, George D.; and Colbert, John R., 3,735,161.
Colby, Charles E. One-way motion detection switch. 3,735,298, Cl. 335-206.000.
Coleman Company, Inc., The: *See—*
May, Randall L., 3,734,682.
Coleman, Stephen N. Power plow. 3,734,198, Cl. 172-258.000.
Collins Radio Company: *See—*
Bruene, Warren B., 3,735,289.
Collison, Roland B. Liquid supplement livestock feeder. 3,734,060, Cl. 119-51.00r.
Colman, John M.: *See—*
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,734,087.
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, to Raytheon Company. Radiographic display system. 3,735,132, Cl. 250-71.550.
Colts Inc.: *See—*
Baker, Richard L., 3,733,729.
Baker, Richard L., 3,733,730.
Columbia Broadcasting System, Inc.: *See—*
Allen, Richard G.; and Torick, Emil, 3,735,275.
Fields, Grover G., 3,733,954.
Mesak, Charles, 3,735,015.
Smith, Clyde W.; and Mc Mann, Renville H., 3,735,026.
Columbia Gas System Service Corporation: *See—*
Reid, Edward A., Jr.; and Venendaal, Robert G., 3,734,065.
Colwell, William C., Jr.: *See—*
Hurst, George W.; and Colwell, William C., Jr., 3,735,023.
Combustion Engineering Inc.: *See—*
Proctor, Edward S., Jr., 3,733,889.
Comer, Donald T., to Mobility Systems, Inc. Vehicle control system. 3,734,229, Cl. 180-98.000.
Cominco Ltd.: *See—*
Watson, Thorpe E.; Parsons, David V.; and Wild, Arthur W., 3,734,785.
Commissariat a l'Energie Atomique: *See—*
Glenat, Henri; and Salvi, Antoine, 3,735,246.
Communications Patents Limited: *See—*
Baker, Henry Louis; Quinton, Kenneth Charles; and Smart, Daniel Henry, 3,735,037.
Compactor Company, Inc., mesne: *See—*
Hennells, Ransom J., 3,734,006.
Compagnie Generale d'Automatisme: *See—*
Despres, Roger, 3,734,266.
Compton, William H.; and Desch, John B., to Comptrol Incorporated. Torque transmitting device. 3,734,256, Cl. 192-84.00a.
Comptrol Incorporated: *See—*
Compton, William H.; and Desch, John B., 3,734,256.
Conboy, Martin E.: *See—*
Hightower, John D.; Conboy, Martin E.; and Phillips, Lawrence, 3,734,058.
Conner, John P.: *See—*
Grunert, Kurt A.; Conner, John P.; and Dauer, John J., Jr., 3,735,295.
Connor, Desmond John, to Mauri Brothers & Thomson Limited. Casein or the like drying machines. 3,733,714, Cl. 34-173.000.
Conrad, Richard R., to I-T-E Imperial Corporation. Self-powered relay target circuit. 3,735,215, Cl. 317-335.00c.
Conrail AB: *See—*
Nordstrom, Kjell Helge; and Flinth, Rune Nils Allan, 3,734,216.
Conru, Harold Ward, to Textron, Inc., mesne. Plastic impregnated fabric journal bearing. 3,734,585, Cl. 308-238.000.
Container Corporation of America: *See—*
Clark, Frank E., 3,734,392.
Continental Can Company, Inc.: *See—*
Cartwright, William J., 3,733,680.
Hansson, Ants, 3,733,880.
Manizza, Guelfo A., 3,734,391.
Continental Oil Company: *See—*
Barrere, Clem A., Jr., 3,733,775.
Control Data Corporation, mesne: *See—*
Roberts, Donald Lee; and George, David John, 3,734,626.
Cook, Charles Wayne, to Fiber Industries, Inc. Method and apparatus for cutting and removing elongated material. 3,733,945, Cl. 83-24.000.
Cook, Darwen J.: *See—*
Balogh, Edward, Jr.; and Cook, Darwen J., 3,735,355.
Cook, Wendell A.: *See—*
Weintraub, Arthur; Cook, Wendell A.; Gatwood, Robert K.; and De Brosse, Kenneth L., 3,735,344.
Cooper, Eugene A.: *See—*
Howes, Peter A.; and Cooper, Eugene A., 3,734,426.
Cooper, Hal B. H. Electrolytic process for the production of alkali metal borohydrides. 3,734,842, Cl. 204-86.000.
Cooper, Julius, to Ideal Toy Corporation. Competitive vehicle demolition game. 3,734,500, Cl. 273-85.00r.
Corbett, Michael J.: *See—*
Osborne, Fred H.; Tuttle, Robert S.; and Corbett, Michael J., 3,734,512.
Corcoran, John W., to Ampex Corporation. Electro-mechanical deflector for light beams. 3,735,258, Cl. 324-97.000.
Corini, Louis J., to Melbro Corporation. Temperature controlled mobile cart. 3,733,836, Cl. 62-3.000.
Corl, James A.: *See—*
Scofield, Donald H.; and Corl, James A., 3,733,696.
Corn, Prentice R.: *See—*
Wolf, Walter A.; and Corn, Prentice R., 3,735,380.
Cornelius, Edward C., to Eastman Kodak Company. Apparatus using reflected polorized light to inspect a moving web. 3,734,624, Cl. 356-118.000.
Cornell, Clark; Himler, Gary J.; and Ahlstrom, John F., to Legalprint. Tape recording editing system. 3,735,348, Cl. 340-146.10r.
Corning Glass Works: *See—*
Randall, Lyman James; and Seward, Thomas P., III, 3,734,754.
Corrigan, John R.; and Coates, William M., to Mead Johnson & Company. Dipyridinium dichromate process of manufacture. 3,734,917, Cl. 260-270.000.
Corson, Fred P.: *See—*
Pews, R. Garth; and Corson, Fred P., 3,734,960.
Corwin, Jordan J.; and Shanahan, William J., to Skiatron Electronics & Television Corporation. Decoding scrambled television. 3,735,027, Cl. 178-5.100.
Coscia, Anthony Thomas; and Williams, Laurence Lyman, to American Cyanamid Company. Water-soluble cationic thermosetting acrylamide-grafted glyoxalated alkylamine-epichlorohydrin wet strength resin and paper containing the same. 3,734,977, Cl. 260-874.000.
Cosden Oil & Chemical Company: *See—*
Douglas, George W., 3,734,686.
Cote, Raymond A., to Rexham Corporation, mesne. Support and display carton for parabolic lamp. 3,734,397, Cl. 229-39.00b.
Coulon, Maurice, to Thomson-CSF. Data display device of the gas discharge type. 3,735,180, Cl. 313-109.500.
Cousins, Leroy L., to Sybron Corporation. Dental compressed air/vacuum apparatus. 3,734,122, Cl. 137-340.000.
Coveney, Donald B.: *See—*
Bennett, Weston T.; Coveney, Donald B.; Lamb, Charles A.; and Hanson, Jonathan Leslie, 3,734,822.

Cowan, Harold L., to Franklin-Cowan Paper Co., Inc. Ticket envelope. 3,734,396, Cl. 229-68.00r.

Coyne, William E.: *See—*
Cusic, John W.; and Coyne, William E., 3,734,971.

CPC International Inc.: *See—*
Headley, Verl E., 3,734,752.

Craig, Dwin R., to Ingenuics, Inc. Emitter location mapping device. 3,735,415, Cl. 346-33.00b.

Craig, William Allan, to Imperial Chemical Industries Limited. Aqueous gel for slurry explosives composition and method of preparing said gel. 3,734,864, Cl. 252-315.000.

Craik, Darrel W., to Teledyne Inc. Interlocking panel assembly. 3,733,767, Cl. 52-529.000.

Cramblet, Charles D. Retractable hinge structure for a truck tailgate. 3,734,560, Cl. 296-50.000.

Cramer, Robert L.; Henneman, John W.; and Myers, William P., to Bendix Corporation, The. Means for anticipating anti-G force in a moving vehicle. 3,734,078, Cl. 128-1.00a.

Crane, H. W., Company: *See—*
Fox, Edward I.; and Fullem, Raymond J., 3,733,747.

Cranston, Benjamin Howell, to Western Electric Company, Incorporated. Explosive bonding of workpieces. 3,733,684, Cl. 29-470.100.

Crast, Leonard Bruce, Jr., to Bristol-Myers Company. 7-[D-(α-Amino-α-phenylacetamido)]-3-(5-methyl-1, 3,4-oxadiazol-2-ylthiomethyl)-3-cephem-4-carboxylic acid and salts thereof. 3,734,907, Cl. 260-243.00c.

CRC-Crose International, Inc.: *See—*
Paysinger, Joseph R.; Sims, Eugene F.; and Nelson, Jerome W., 3,733,939.

Cronig, Alvin: *See—*
Armstrong, Clarence J.; and Cronig, Alvin, 3,733,994.

Crooks, James W., Jr.: *See—*
Kalitinsky, Andrew; and Crooks, James W., Jr., 3,735,139.

Crosson, William J., to Cities Service Company. Frame back and easel assembly. 3,734,446, Cl. 248-460.000.

Crowley, William A. Apparatus for removing particulate and gaseous pollutants from stack smoke. 3,733,788, Cl. 55-228.000.

Crown Controls Corporation: *See—*
Tang, Alexander Reuben, 3,734,240.

Crown Cork & Seal Company, Inc.: *See—*
De Stefano, Albert F., Jr., 3,734,407.

Croxton, John Mervyn, to Nesbit, J.-Evans & Company, Limited. Hospital beds. 3,733,623, Cl. 5-63.000.

Cryderman, George W., to Koehring-Waterous, Ltd. Finger bars for pulpwood grinders. 3,734,419, Cl. 241-282.000.

CTS Corporation: *See—*
Bradley, Deward C., 3,735,166.
Rozema, Arthur L.; Budd, Wilbert H.; and Kelver, William L., 3,735,327.

Culpepper, George O., Jr.; and Wyss, Clement R., 1/3 to Kendall, Jim W. and 1/3 to Pitts, James W. Method and apparatus for cleaning solids for pollution free disposal. 3,734,774, Cl. 134-2.000.

Cummings, Charles A.: *See—*
Davis, Howard C.; Trumbull, Harold E.; and Cummings, Charles A., 3,734,607.

Curley, Morton B. Navigation aid. 3,735,406, Cl. 343-101.000.

Currier-Smith Corporation: *See—*
Bennett, Victor A., Jr., 3,735,367.

Curtis, Donald R., to Allis-Chalmers Manufacturing Company. Headbox for cylinder roll papermaking machine. 3,734,821, Cl. 162-317.000.

Cusic, John W.; and Coyne, William E., to Searle, G. D., & Co. Dibenzo [a,e] cyclopropa [c] cycloheptene derivatives. 3,734,971, Cl. 260-618.00f.

Cutters Machine Company, Inc.: *See—*
Fort, Johnny L.; and Frederick, Cecil S., 3,735,223.

CWS International AG: *See—*
Schnyder, Conrad W., 3,734,586.

CX Processing Laboratories, Inc.: *See—*
Erickson, Arlen J.; and Tall, Leonard H., 3,733,770.

Cyba, Henrik A.; and Sparks, Allen K., to Universal Oil Products Company. Novel flame retardant compositions of matter. 3,734,758, Cl. 106-193.00r.

Dahl, Christian W.; and Hartzell Corporation, to Motorcycle dynamometer. . 3,733,894, Cl. 73-117.000.

Dahl, Eileen C. Vehicle wheel position indicator. 3,734,051, Cl. 116-31.000.

Dahl, Goran: *See—*
Andersson, Henry; Dahl, Goran; and Arnell, C. G., 3,734,024.

Dai Nippon Toryo Co., Ltd.: *See—*
Wakimoto, Saburo; Tugukuni, Hideyoshi; and Kano, Masafumi, 3,734,872.

Daigle, Donald J.: *See—*
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., 3,734,684.

Daiichi Seiyaku Company, Limited: *See—*
Asano, Kazuo; Furukawa, Minoru; and Kanda, Nobuo, 3,735,006.

Daimler-Benz Aktiengesellschaft: *See—*
Gumtau, Hans Dieter; and Kowarsch, Rainer, 3,735,244.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Oda, Osamu, 3,734,014.

Dalglish, Herbert Francis. Roll lifter. 3,734,328, Cl. 214-652.000.

Dalton, John J.; and Skolnik, Marvin B., to International Business Machines Corporation. Gray scale gas panel. 3,735,182, Cl. 313-188.000.

Danforth, Donald W., to Bolton-Emerson Inc. Freeness testing apparatus and method for open containers. 3,733,888, Cl. 73-63.000.

Danfoss A/S: *See—*
Andresen, Jens Nicolai, 3,735,069.

Daniel, William H. Airfoil vacuum pump with tapered rotor. 3,734,640, Cl. 415-213.000.

Danner, William E.; and Ilines, Laurence J. Child proof bottle cap. 3,734,330, Cl. 215-9.000.

Danzig, Meyer H.; and Carlson, Allen W., to Air Products and Chemicals, Inc. Preparation of plastic products from vinyl chloride/propylene copolymers. 3,734,806, Cl. 161-2.000.

Daoust, Donald R., to Merck & Co. Fermentation process for producing physostigmine. 3,734,832, Cl. 195-80.00r.

D'Apuzzo, Louis, to Goodman, H., & Sons, Inc. Gems in linked settings and mechanically secured to a base member. 3,733,851, Cl. 63-1.000.

Darlington Fabrics Corporation: *See—*
Wittmann, Christoph J., 3,733,859.

Darms, Roland, to Du Pont de Nemours, E. I., and Company. Polketals of aromatic polketones. 3,734,888, Cl. 260-47.00r.

Data Interface Associates, mesne: *See—*
Ott, Owen J.; and Ginn, David W., 3,735,416.

Dattilo, Donald J., to Motorola, Inc. Cartridge tape recorder/reproducer stripper assembly. 3,734,373, Cl. 226-196.000.

Dauer, John J., Jr.: *See—*
Grunert, Kurt A.; Conner, John P.; and Dauer, John J., Jr., 3,735,295.

David, Milton C.: *See—*
Tucker, Atlee Dee, Jr.; and David, Milton C., 3,734,088.

Davies, Gilbert E.; Loubier, Robert J.; Weston, John M.; and Muhn, Robert A., to Tuthill Pump Company. Apparatus for fabricating a bearing device. 3,734,660, Cl. 425-123.000.

Davies, Norman, to Westinghouse Electric Corporation. Circuit interrupter with overcenter spring charging means. 3,735,073, Cl. 200-153.0sc.

Davis, Carlton J., Sr.; Wood, Richard P.; and Miller, Everett R. Sheet molding compound and materials thereof. 3,734,814, Cl. 161-112.000.

Davis, Dennis J.; Kurichh, Sham L.; and Pataky, Gilbert A., to Bendix-Westinghouse Automotive Air Brake Company. Adaptive control for fluid pressure braking systems. 3,734,573, Cl. 303-21.00f.

Davis, Harvey L., to Bishop Freeman Company. Ironing board pad. 3,733,724, Cl. 38-140.000.

Davis, Howard C.; Trumbull, Harold E.; and Cummings, Charles A., to Xerox Corporation. Color reporduction apparatus. 3,734,607, Cl. 355-4.000.

Davis, John Brian: *See—*
Cheng, David Chung-Hsun; and Davis, John Brian, 3,734,468.

Davis, Noel, to Integrated Development and Manufacturing Co. Heating and cooling system. 3,734,810, Cl. 165-29.000.

Davis, Richard P. Support assembly for punches and piston rods. 3,733,946, Cl. 83-129.000.

Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., to Motorola, Inc. Integrated circuit current regulator with differential amplifier control. 3,735,240, Cl. 323-4.000.

Dayton Manufacturing Company: *See—*
Schondelmyer, Scott M., 3,734,291.

De Baun, Kenneth W., to Air Monitor Corporation. Fan capacity measuring station. 3,733,900, Cl. 73-212.000.

De Brosse, Kenneth L.: *See—*
Weintraub, Arthur; Cook, Wendell A.; Gatwood, Robert K.; and De Brosse, Kenneth L., 3,735,344.

De Felice, Amedio P. Safety cap. 3,734,331, Cl. 215-9.000.

De Felice, David F. Aerosol color mixture and method of making same. 3,734,747, Cl. 99-148.00r.

De Groot, Jacob, to U.S. Philips Corporation. Coil support. 3,735,307, Cl. 336-192.000.

De Groote, Raymond S., to United Aircraft Products, Inc. Water or like boiler. 3,734,168, Cl. 165-11.000.

De Santis, Alfred John: *See—*
Beers, Leroy Walter; and De Santis, Alfred John, 3,735,363.

De Sisto, Richard E.: *See—*
Finberg, Raymond H.; Edelson, Robert B.; and De Sisto, Richard E., 3,733,640.

De Stefano, Albert F., Jr., to Crown Cork & Seal Company, Inc. Dual spray and recirculation system. 3,734,407, Cl. 239-13.000.

De Vries, Robert. Transport means or vehicle, or a fluid bed. 3,734,231, Cl. 180-125.000.

Dean, Frank James, Jr., to Tempmaster Corporation. Temperature control terminal unit. 3,734,192, Cl. 165-39.000.

Deck, Howard C., to Graflex, Inc. Slot load projector. 3,734,602, Cl. 352-157.000.

Deere & Company: *See—*
Allen, David Thomas, 3,733,794.
Cantral, John Isaac, 3,734,195.
Schlueter, Francis Edward, 3,734,563.
Tsuchiya, William Sadayuki; and Adams, Thomas Burton, Jr., 3,734,199.
Wood, William Robert; and Burrough, Donald E., 3,733,796.
Zaun, Richard David, 3,734,201.

Deering Milliken Research Corporation: *See—*

Sanders, Grady H., 3,733,644.
Degelleke, Gerrit; and Bush, Robert E., to Midland-Ross Corporation. Apparatus for handling rewind rolls. 3,734,307, Cl. 214-1.0bd.
Deibel, Raymond A.: *See—*
Papadatos, Dionysios D.; Deibel, Raymond A.; and Riester, William C., 3,733,915.
Delahunty, Terry Wayne, to Chicago Bridge & Iron Company. System for reliquefying boil-off vapor from liquefied gas. 3,733,838, Cl. 62-54.000.
Delaney, Lyle F.; and Mager, Leon A., to Sperry Rand Corporation. Multiplexed memory request interface. 3,735,354, Cl. 340-172.500.
DeLurik Corporation: *See—*
Roos, William N., 3,734,457.
Demag AG: *See—*
Spiecker, Karl Heinz, 3,733,874.
Demny, Helmut: *See—*
Knecht, Siegfried; and Demny, Helmut, 3,734,804.
Dengel, Ottmar H.: *See—*
Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., 3,734,863.
Denki Onkyo Co., Ltd.: *See—*
Ikeuchi, Hiroshi, 3,735,193.
Dennis, William E., to Dow Corning Corporation. Preparation of nitriles. 3,734,942, Cl. 260-465.00b.
Dennison Manufacturing Company: *See—*
Bone, Arnold R.; and Krohn, Ronald W., 3,734,375.
Dennison Manufacturing Company, mesne: *See—*
Lankton, Gordon B., 3,733,657.
Derby, Palmer P., to Raytheon Company. Cycle converter power supply for microwave heating. 3,735,237, Cl. 321-6.000.
Derossi, Piero. Overload applied no-back brakes. 3,734,253, Cl. 192-8.00c.
Dervay, John R.: *See—*
Anderson, William M.; and Dervay, John R., 3,733,784.
Desch, John B.: *See—*
Compton, William H.; and Desch, John B., 3,734,256.
Despres, Roger, to Compagnie Generale d'Automatisme. Transfer station. 3,734,266, Cl. 198-24.000.
Dessau, Ralph M.: *See—*
Heiba, El Ahmadi I.; and Dessau, Ralph M., 3,734,865.
Detrex Chemical Industries, Inc.: *See—*
Kearney, Thomas J.; and Bieber, George F., 3,733,710.
Dever, James A.; Tenan, Harry D.; and Finley, George R., to Green Ball Bearing Company, The. Tow bar means. 3,734,536, Cl. 280-204.000.
Device for molding patties and the like: *See—*
House, Eugene R., 3,733,652.
Devlin, Barry R. J.: *See—*
Yates, John; and Devlin, Barry R. J., 3,734,711.
Dewas, Raymond. Shuttleless loom. 3,734,142, Cl. 139-123.000.
Dexter, Martin, to Aba-Geigy Corporation. Benzophenone-3,4,3',4-tetracarboxylic acid diimides of 3,5-dialkyl-4-hydroxyphenylsubstituted amines. 3,734,926, Cl. 260-326.00n.
Dexter, Theodore H.: *See—*
Bowen, Jonathan L.; and Dexter, Theodore H., 3,734,860.
Dhaka, Vir A.; and Krolikowski, Walter F., to International Business Machines Corporation. Fabrication of diffused junction capacitor by simultaneous outdiffusion. 3,734,787, Cl. 148-175.000.
Diamagnetics, Inc.: *See—*
Fox, James E., 3,735,133.
Diamond, Herrick R.: *See—*
Doll, Peter A.; Cappotto, Samuel D.; Diamond, Herrick R.; and Lohr, Ernest F., 3,734,262.
Diamond Shamrock Corporation: *See—*
Lipowski, Stanley A.; and Miskel, John J., Jr., 3,734,889.
Dichiara, Anthony J. Automatic case slitting and flap folding apparatus. 3,733,772, Cl. 53-167.000.
Dicker International, Inc.: *See—*
Pipa, William J., 3,733,741.
Diebold, James L.; Sanet, Joel S.; and Wolf, Milton, to American Home Products Corporation. Penicillins derived from the reaction of enamines with 6-isocyanatopenicillanic acid saccharimide. 3,734,903, Cl. 260-239.100.
Diebold, James L.; and Wolf, Milton, to American Home Products Corporation. Carbamate and thiocarbamate derivatives of 6-isocyanato penicillanic acid saccharimide. 3,734,906, Cl. 260-239.100.
Diederich, Warren B. Method of utilizing junk cars to produce building blocks. 3,733,675, Cl. 29-403.000.
Diersbock, Gunther Rudolph, to Timex Corporation. Electronic alarm watch. 3,733,804, Cl. 58-38.000.
Diesel Equipment Limited: *See—*
Martin, Paul H.; and McKee, William C., 3,734,239.
Dietch, Leonard, to Zenith Radio Corporation. Intermediate sub-assembly for use in making color picture tubes. 3,733,976, Cl. 95-1.00r.
Dieterich, Frank L. Spring contact blank. 3,735,079, Cl. 200-166.00f.
Dietrich, Johannes: *See—*
Pfeiffer, Kurt; Dietrich, Johannes; Schonberg, Karl-Heinz; and Beckmann, Gunter, 3,734,400.
Dietrick, Eugene Lewis; and Linkus, Joseph Anthony, to Warner & Swasey Company, The. Selective stripper mechanism. 3,733,944, Cl. 83-62.000.
Dimensional Production Limited: *See—*
Nerlich, Gunter, 3,734,596.
Diolot, Lucien, to Societe Nouvelle Spidem. Rolling mill employing non-variable prestressing. 3,733,870, Cl. 72-245.000.
Dirks, Arthur A. Revolvable station for processing a movable procession of factory-work pieces such as animal carcasses. 3,734,263, Cl. 198-19.000.
Diro Industries Corporation: *See—*
Rastocny, John, 3,734,301.
Display Technology Corporation: *See—*
Aiken, William Ross, 3,734,598.
Dittmer, Georg: *See—*
Klopfer, Anton Martin; and Dittmer, Georg, 3,735,186.
Dixon, Thomas P., to United Aircraft Corporation. Aerodynamic blade root end attachment. 3,734,642, Cl. 416-61.000.
Dodge, Robert J., to Automatic Power Division. Sound signaling system having adjustable horizontal directivity. 3,734,053, Cl. 116-137.000.
Dodman, David; Laithwaite, Peter; Leyland, Boris Nicholas; and Quan, Peter Michael, to Imperial Chemical Industries Limited. Stabilized rubber containing 4-nitrosodiphenylhydroxylamine of derivative. 3,734,886, Cl. 260-45.90r.
Dolgolenko, Anatoly Alexandrovich; Onokhov, Pavel Pavlovich; Makhover, Jury Meerovich; and Gudovich, Alexandr Markovich. Band conveyor on an air cushion. 3,734,271, Cl. 198-184.000.
Doll, Peter A.; Cappotto, Samuel D.; Diamond, Herrick R.; and Lohr, Ernest F., to SCM Corporation. Typebar guide and repulser device. 3,734,262, Cl. 197-43.000.
Dollinger, Robert E., to Phillips Petroleum Company. Control of carbon black quality. 3,734,999, Cl. 423-450.000.
Domaas, Perry M., to Textron, Inc. Centrifugal clutch. 3,733,918, Cl. 74-230.17e.
Dominion Engineering Works, Limited: *See—*
Field, Michael Frank, 3,733,877.
Donald Engineering Company, Inc.: *See—*
Gauthier, Donald E.; and Jones, William V., 3,734,313.
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., to United States of America, Agriculture. Flame retardant phosphorus containing fibrous products and method for production. 3,734,684, Cl. 8-116.200
Donnelly, Thomas S.; and Seidel, William C., to American Aviation Corporation. Stall warning system utilizing an electronic time delay. 3,735,340, Cl. 340-27.0ss.
Donovan, John C.; Krishnaiyer, Ramesh; and Esser, Frank J., to Johnson Service Company. Alarm transmission line security system utilizing pseudo random encoding. 3,735,353, Cl. 340-164.00r.
Donovan, Marion. Combined check and record-keeping book. 3,734,543, Cl. 282-23.00r.
Dooley, Dan W., to McCarthy, Kenneth E. Dispensing system. 3,734,352, Cl. 222-148.000.
Dooley, David Francis, to Milprint, Inc. Flexible package with double layered walls. 3,734,394, Cl. 229-55.000.
Dooley, Donald David, to Borden, Inc. Hot melt package coating method. 3,734,798, Cl. 156-308.000.
Doolittle, James B.: *See—*
Etcheverry, John P.; and Doolittle, James B., 3,734,128.
Dop, Pierre: *See—*
Benner, Jean-Rene; Dop, Pierre; and Caron, Marcel, 3,735,300.
Doppelt, Mandel A. Carrying case with freely hinged closure. 3,734,250, Cl. 190-48.000.
Dorfel, Gerhard Walter, to Ahlstrom A. Oxakeyhtio. Device for regulating the tension of a moving web. 3,734,371, Cl. 226-109.000.
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., to Hooker Chemical Corporation. Halogenated triazine elastomers. 3,734,976, Cl. 260-823.000.
Doric Corporation: *See—*
Rosenbloom, Morris, 3,734,043.
Dorsey, Charles M.; Laurent, Harold J.; Slavin, Michael; and Stauffer, Reuben Laverne, to Bendix Corporation, The. Duplex tuning for radio receivers. 3,735,268, Cl. 325-464.000.
Douglas, George W., to Cosden Oil & Chemical Company. Composition and method for treating carpets and pile fabrics. 3,734,686, Cl. 8-137.000.
Douglas, Jack E., to Shaw, Arthur, Manufacturing Limited. Hinges. 3,733,650, Cl. 16-160.000.
Dover Corporation: *See—*
McMath, Jack A., 3,734,115.
Dow Chemical Company, The: *See—*
Bradshaw, William L., 3,734,718.
Glesner, William K.; and Thompson, Clifford E., 3,734,990.
Hickner, Richard A.; and Goss, Edward W., 3,734,968.
Jezic, Zdravko, 3,734,928.
King, Stanley T., 3,734,056.
Parks, Christ F.; and Eilers, Louis H., 3,733,833.
Pews, R. Garth; and Corson, Fred P., 3,734,960.
Root, Roland L.; and Eilers, Louis H., 3,734,188.
Dow Corning Corporation: *See—*
Dennis, William E., 3,734,942.
Plueddemann, Edwin P., 3,734,763.
Shingledecker, Ross A., 3,734,881.
Talcott, Thomas D., 3,734,882.
Dowding, John; and Leeds, William George, England, to May & Baker Limited. Thiazole derivatives. 3,734,923, Cl. 260-306.80r.
Downen, Jim L.: *See—*
Sutliff, Wayne N.; and Downen, Jim L., 3,733,853.

Downing, John G. Knock-down display structure. 3,734,033, Cl. 108-111.000.

Downs, Clifford L.; and Blackburn, Richard D., to General Electric Company. Control system for tap changer with vacuum interrupter. 3,735,243, Cl. 323-43.50r.

Doxford and Sunderland Limited: *See—*
Butler, John Francis; Jordan, John William; and Orbeck, Finn, 3,734,074.

Draiswerke GmbH, Firma: *See—*
Engels, Kaspar, 3,734,471.

Drake, George L., Jr.: *See—*
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., 3,734,684.

Drangeid, Karsten E.; and Moser, Andreas, to International Business Machines Corporation. Method and circuit for converting an analog signal into a simultaneous digital signal. 3,735,390, Cl. 340-347.0ad.

Dravnieks, Konstantins, to Wehr Corporation. Heat transferer. 3,733,791, Cl. 55-390.000.

Drawert, Manfred: *See—*
Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen, 3,734,871.

Dray, Robert F., to Extruders, Inc. Plastic extrusion apparatus. 3,734,667, Cl. 425-190.000.

Dreher, Manfrid, to Dreher, Manfrid, Dr., Ing., KG. Mixing apparatus. 3,734,470, Cl. 259-89.000.

Dreher, Manfrid, Dr., Ing., KG: *See—*
Dreher, Manfrid, 3,734,470.

Drucker, Ernest R. Modular building and service tower therefor. 3,733,763, Cl. 52-126.000.

Du Pont de Nemours, E. I., and Company: *See—*
Blecha, Dennis Leonard, 3,734,994.
Chen, Chung C., 3,734,920.
Darms, Roland, 3,734,888.
Hoyer, Paul Jean; and Rushmere, John Derek, 3,734,839.
Maucher, Lawrence Ambrose, 3,733,686.
Tubbs, Robert K., 3,734,843.
Waldin, Vincent Howard, 3,733,839.
Zafiroglu, Dimitri P., 3,734,139.

Duchemin, Michel, to Ressorts du Nord S.A. Device for fixing a leaf spring. 3,734,482, Cl. 267-52.000.

Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich. Apparatus for packaging stacks of flat articles into packages. 3,733,774, Cl. 53-232.00.

Dudek, Edmund C., to Thor Power Tool Company. Power wrench with interchangeable adapters. 3,734,515, Cl. 279-1.00a.

Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Method of making stereoscopic photographs. 3,734,618, Cl. 355-132.000.

Dudley Optical Laboratories, Inc.: *See—*
Dudley, Leslie Peter, 3,734,618.

Duffy, James J., to Ford Motor Company. Power steering mechsnism for automotive vehicles. 3,733,967, Cl. 91-375.00a.

Dunbar, Helen. Bobbin dispenser. 3,734,347, Cl. 221-134.000.

Dunlop Holdings Limited: *See—*
Buckley, Stanley G., 3,734,247.

Dunn, Howard E., to Phillips Petroleum Company. Catalytic dimerization of olefins with a bis (isoquinoline)dihalocobalt(II) complex. 3,734,975, Cl. 260-683.15d.

Dunn, Kathy A.: *See—*
Glass, Marvin I.; and Dunn, Kathy A., 3,734,509.

Dunn, Robert A., to Addressograph-Multigraph Corporation. Optical code reading system. 3,735,094, Cl. 235-61.11e.

Dunnenberger, Max; and Biland, Hans Rudolf, to Ciba-Geigy AG. Bisoxalic acid diamides as stabilizers. 3,734,884, Cl. 260-45.9nc.

Durand, Pierre, to Societe Anonyme Richier. Traveling monotower crane base. 3,734,302, Cl. 212-1.000.

Durant, Graham John: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,734,924.

Duron, Paul P.; Carter, Thomas A., Jr.; and Mondok, Frank, to Airco, Inc. Freezing system. 3,733,848, Cl. 62-381.000.

Dvonch, William: *See—*
Alburn, Harvey E.; and Dvonch, William, 3,734,949.

Dymo Industries, Inc.: *See—*
Anderson, James D., 3,734,808.

Dynamit Nobel Aktiengesellschaft: *See—*
El-Chahawi, Moustafa; and Richtzenhain, Hermann, 3,734,957.

E. T. Manufacturing Co., Inc.: *See—*
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., 3,734,100.

E-System, Inc.: *See—*
Gershberg, David N.; and Lee Alex Y., 3,735,409.

E-System, Inc., mesne: *See—*
Redmond, William G., 3,735,228.

Eastcott, Peter de Hertel; Messervey, William Albert; and Wyeth, William Albert, to Canadian General Electric Company Limited. Method and apparatus for torque sharing. 3,734,257, Cl. 192-87.130.

Eastman Kodak Company: *See—*
Bredoux, Francois Jean-Marie; Mercier, Claude Andre; and Phlipot, Georges Achille, 3,735,135.
Cornelius, Edward C., 3,734,624.
Figueras, John; and Stern, Max H., 3,734,726.
Harvey, James E.; and Gnage, Oliver W., 3,734,612.
Hickey, Lionel Russell; and McCune, Ellsworth Jacob, 3,734,608.
Hoffman, Edward P., 3,734,984.
Kibler, Charles J.; and Lappin, Gerald R., 3,734,874.
Kurtz, Donald W.; and Harbison, Judith M., 3,734,738.
Palmer, Allan M., 3,734,427.
Robinson, Alfred G., 3,734,929.
Rudd, Robert G., 3,734,736.
York, William C., 3,734,724.

Eaton Corporation: *See—*
Esser, Ernst S., 3,734,326.
Grygera, James W., 3,735,202.
Roob, Elwood L., 3,734,258.

Eaton Corporation, mesne: *See—*
Pease, Logan L., 3,735,352.

EBE Elektro-Bau-Elemente GmbH: *See—*
Glaser, Karl; and Stengle, Ernst, 3,735,059.

Ebel, Lawrence Charles. Anaconda Wire and Cable Company High-voltage cable and method of making. 3,734,794, Cl. 156-53.000.

Eberhard, Gunter, to Siemens Aktiengesellschaft. Integrated bistable stage having MOS field effect transistors. 3,735,155, Cl. 307-279.000.

Ebin, Joseph A.; and Logan, John W., to Lockheed Aircraft Corporation. Lamp fixture and fluorescent lamp therefor. 3,735,122, Cl. 240-51.120.

Ebisu, Takeshi. Apparatus for folding flexible sheet. 3,734,372, Cl. 226-114.000.

Ebsary, Vivan Richard, to Rockwell Manufacturing Company. Flexible vane turbine pump. 3,734,638, Cl. 415-141.000.

Echols, Thedford D., Jr. Poultry handling cart. 3,734,528, Cl. 280-42.000.

Eckert, Konrad, to Bosch, Robert, G.m.b.H. Electromagnet. 3,735,302, Cl. 335-262.000.

Edelson, Robert B.: *See—*
Finberg, Raymond H.; Edelson, Robert B.; and De Sisto, Richard E., 3,733,640.

Edstrom, Soren E. H.; and Seckman, John E., to Gardner-Denver Company. Screw compressor. 3,734,653, Cl. 418-88.000.

Edwards, William R., to United States of America, Navy. Laser boresight kit and method of alignment. 3,734,627, Cl. 356-153.000.

Effron, Edward: *See—*
Goldstein, Arnold M.; Effron, Edward; and Hochman, Jack M., 3,734,469.

Eftax, Daniel S. P.: *See—*
Brown, Lloyd H.; and Eftax, Daniel S. P., 3,734,936.

EG&G, Inc.: *See—*
Lucas, Arthur C., 3,735,134.

Eibensteiner, Walter, to U.S. Philips Corporation. Recording and/or playback apparatus with tape engagement means resiliently urged to an operating position. 3,735,053, Cl. 179-100.2za.

Eichler, Dieter: *See—*
Glockler, Otto; Schmid, Hermann; and Eichler, Dieter, 3,734,067.

Eilers, Louis H.: *See—*
Parks, Christ F.; and Eilers, Louis H., 3,733,833.
Root, Roland L.; and Eilers, Louis H., 3,734,188.

Eisner, Steve, to Norton Company. Multiple metal electrodeposition. 3,734,838, Cl. 204-43.00r.

El Paso Natural Gas Company: *See—*
Stoll, Donald F., 3,735,249.

El-Chahawi, Moustafa; and Richtzenhain, Hermann, to Dynamit Nobel Aktiengesellschaft. Method for the production of α,α-dialkylβ-chloropropionic acids. 3,734,957, Cl. 260-539.00r.

Elders, Gerald W.; Schneider, Thomas E.; deceased (by Schneider, Thomas R.; administrator); and Alongi, John R. Machine for driving mine roof pins. 3,734,380, Cl. 227-140.000.

Electroacustic GmbH: *See—*
Ahrens, Erhard; Prill, Christian; and Wendorff, Hans H., 3,735,334.

Electronic Associates Inc.: *See—*
Lowe, Richard Douglas, 3,735,287.

Elestrosil Limited: *See—*
Gooding, Trevor Frank John; and Howse, Geoffrey David Stuart, 3,735,326.

Elgert, Albert H.; and Harmes, Lee D., to Kaiser Aluminum & Chemical Corporation. Bridling attachment for a rolling mill. 3,733,869, Cl. 72-205.000.

Elitex, Zavody textilniho strojirenstvi, generalni reditelstvi: *See—*
Svaty, Vladimir, 3,734,143.

Elkas, Louis: *See—*
Stark, Edward M.; and Elkas, Louis, 3,733,732.

Elliott, Everett: *See—*
Burenga, Thomas I.; and Elliott, Everett, 3,734,654.

Ellis, Robert. Means for more conveniently peruse from a large sheet of paper. 3,734,809, Cl. 161-17.000.

Ellis, Robert P. Refrigerator cabinet. 3,734,588, Cl. 312-247.000.

Ellis, William R., Jr. Lift truck side shifting means. 3,734,327, Cl. 214-730.000.

Elsbett, Gunter; and Elsbett, Ludwig, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg. Piston, especially for compression ignition engines. 3,733,973, Cl. 92-159.000.

Elsbett, Ludwig: *See—*
Elsbett, Gunter; and Elsbett, Ludwig, 3,733,973.

Elymer, Gerald Kenneth: *See—*
Roswell, Arthur Edward; and Elymer, Gerald Kenneth, 3,735,208.

EMA AG: *See—*

Brockmuller, Ingo, 3,735,229.
Emerson Electric Co.: *See—*
Stahlhut, Leo G., 3,735,124.
Emerson, William E.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., 3,734,976.
Emhart Corporation: *See—*
Stark, Edward M.; and Elkas, Louis, 3,733,732.
Eminger, Robert J.; and Tyson, Clayton L., to Essex International, Inc. Apparatus for forming concentric, multi-turn, nested dynamoelectric machine field coils. 3,734,145, Cl. 140-92.100.
Emme Company, The: *See—*
Harker, Wesley H., 3,735,247.
Emmett, John Colin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,734,924.
Emura, Tokumatsu: *See—*
Michishita, Katsumi; Okami, Yuji; and Emura, Tokumatsu, 3,734,628.
Enfantino, Nick. Guide for cutting torch. 3,734,477, Cl. 266-23.00m.
Engel, Charles E.: *See—*
McKenzie, Joe A.; and Engel, Charles E., 3,734,021.
Engelhard, Otto, to Tarnoff, Mark and Tarnoff, Fleurette. Warp knit foot covering. 3,733,860, Cl. 66-195.000.
Engelhart, John E., to Esso Research and Engineering Company. Herbicidal fluorinated phenyl ureas and thioureas. 3,734,961, Cl. 260-553.00a.
Engels, Kaspar, to Draiswerke GmbH, Firma. Device for continuous mixing of solids with liquids. 3,734,471, Cl. 259-6.000.
Engerbretsen, Einar O., to Hobart Manufacturing Company, The. Compactor and drive assembly. 3,734,009, Cl. 100-229.000.
Engineered Products, Inc.: *See—*
Vance, Lawrence T., 3,734,550.
England, Charles John, to Monotype Corporation Limited, The. Photocomposing apparatus. 3,733,979, Cl. 95-4.500.
Enright, Dennis J. Chain snubbing and pole-gripping device for pole-raising apparatus. 3,734,463, Cl. 254-30.000.
Entler, Richard W.: *See—*
Russell, Robert C.; and Entler, Richard W., 3,734,765.
Environmental Pollution Research Corporation: *See—*
Ippolito, Amos D.; and Ma, William Y. L. (said Ippolito assor to), 3,734,340.
Envirotech Corporation, mesne: *See—*
Gallaer, Charles A., 3,733,785.
Enz, John H. F.: *See—*
Trier, James J.; and Enz, John H. F., 3,734,017.
Epstein, Harry, to Kastar, Inc. Electrician's combination tool. 3,733,627, Cl. 7-5.400.
Erba, Carlo, S.p.A.: *See—*
Ambrogi, Vittorio; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,734,910.
Erickson, Arlen J.; and Tall, Leonard H., to CX Processing Laboratories, Inc. Processor's method and apparatus for packing photographs. 3,733,770, Cl. 53-29.000.
Erickson Tool Company: *See—*
Benjamin, Milton L., 3,734,517.
Ericson, Harry A. H.: *See—*
Almegard, Svante G.; and Ericson, Harry A. H., 3,734,108.
Erk, Amir; Tessmann, Ottomar; and Schirrich, Klaus, to Fischer & Kreck KG. Bag. 3,734,395, Cl. 229-58.000.
Eruchart, Robert: *See—*
Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, 3,735,373.
Erwood, Charles William. Method of making an electrochemical timing member. 3,734,836, Cl. 204-15.000.
ESB Incorporated: *See—*
Bilhorn, John M.; Bergum, Bernard C.; and Anderson, Kent V., 3,734,780.
Eshelman, Robert W.; and Ohar, Waysl, to Chrysler Corporation. Thermostatic vacuum valve. 3,734,403, Cl. 236-87.000.
Esser, Ernst S., to Eaton Corporation. Variable capacity lift truck. 3,734,326, Cl. 214-674.000.
Esser, Frank J.: *See—*
Donovan, John C.; Krishnaiyer, Ramesh; and Esser, Frank J., 3,735,353.
Essex International, Inc.: *See—*
Eminger, Robert J.; and Tyson, Clayton L., 3,734,145.
Esso Production Research Company: *See—*
Williams, Bert B., 3,734,186.
Esso Research and Engineering Company: *See—*
Engelhart, John E., 3,734,961.
Goldstein, Arnold M.; Effron, Edward; and Hochman, Jack M., 3,734,469.
Langer, Arthur W., Jr.; and Whitney, Thomas A., 3,734,963.
Li, Norman N.; and Asher, William J., 3,733,776.
Patton, Tad L., 3,734,896.
Small, Augustus B.; Gorman, Paul T.; and McGarry, Frederick J., 3,734,811.
Estep, Alton W. Interference controlled communications cable. 3,735,022, Cl. 174-117.00f.
Estes, James W.; Geiger, Lewis J., Jr.; and Shepherd, Thomas L., to Airco Inc. Oxy-fuel process for melting aluminium. 3,734,719, Cl. 75-65.000.
Etablissements Thomas Defawes: *See—*
Soudrons, Edmond, 3,734,178.
Etcheverry, John P.; and Doolittle, James B., to International Telephone and Telegraph Corporation. Pneumatic dump valve. 3,734,128, Cl. 137-596.200.
Eto, Tetutoro. Integrating A-D conversion system. 3,735,394, Cl. 340-347.0nt.
Ettel, Hubert, to Mende, Wilhelm, & Co. Apparatus for continuous manufacture of chipboard. 3,734,669, Cl. 425-373.000.
Evans, David J. I.: *See—*
Kushnir, Bud W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David J. I., 3,734,713.
Evans, Howard J.: *See—*
Bonner, Joseph A.; and Evans, Howard J., 3,733,904.
Evans, Howard J.; Lofink, Joseph P.; and Bonner, Joseph A., to Rockwell Manufacturing Company. Turbine meter assembly. 3,733,910, Cl. 73-231.00r.
EVG Entwicklungs- und Verwertungsgesellschaft m.b.H., Firma: *See—*
Ritter, Klaus; Ritter, Josef; Ritter, Gerhard; and Hans, Gott, 3,734,383.
Ewale, Thomas Matthew: *See—*
Paterson, Alan Hunter; Ewale, Thomas Matthew; and Rogers, John Samuel, 3,734,673.
Extruders, Inc.: *See—*
Dray, Robert F., 3,734,667.
Faant, Siamac: *See—*
Babunovic, Momir; and Faant, Siamac, 3,735,144.
Fagan, Lloyd D.: *See—*
Rizzi, Joseph D.; and Fagan, Lloyd D., 3,733,690.
Fahey, Frank R.: *See—*
Reithmeier, Alton F.; and Fahey, Frank R., 3,735,043.
Fairchild Camera and Instrument Corporation: *See—*
Kapnias, Demetrios E., 3,735,211.
Fairneny, Samuel. Laundry apparatus. 3,734,688, Cl. 8-159.000.
Falk, David O.: *See—*
Norton, Charles J.; and Falk, David O., 3,734,187.
Falk, Henry Joseph, to Union Carbide Corporation. Spray refrigeration system for low temperature-sensitive product. 3,734,169, Cl. 165-28.000.
Falls Metal Works, Inc.: *See—*
Persson, Tage G., 3,733,962.
Fanner Manufacturing Company; a division of Textron, Inc.: *See—*
Schlein, Seymour N., 3,733,681.
Farabaugh, Aloysius W., to PPG Industries, Inc. Method and apparatus for determining contours of objects, especially of glass. 3,733,704, Cl. 33-174.00l.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Bade, Heribert; Bellefontaine, August; and Kienast, Gerhard, 3,734,996.
Lorenz, Walter; and Hammann, Ingeborg, 3,734,914.
Niederprum, Hans; and Voss, Peter, 3,734,962.
Scharfe, Gerhard; Swodenk, Wolfgang; Grolig, Johann; and Martin, Manfred, 3,734,950.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Hunger, Klaus, 3,734,981.
Farkas, David R.: *See—*
Naccarato, James E.; and Farkas, David R., 3,733,996.
Farrar, Ralph C.: *See—*
Naylor, Floyd E.; and Farrar, Ralph C., 3,734,972.
Farrar, Ralph C., to Phillips Petroleum Company. Multifunctional polymerization initiators from diisopropenyl-benzene. 3,734,973, Cl. 260-665.00r.
Fatula, James J., to Ryman Engineering Company. Indexing apparatus. 3,733,929, Cl. 74-822.000.
Fava, Renato: *See—*
Bertoni, Luigi; Pizzamiglio, Giancarlo; Fava, Renato; and Cimarosti, Giordano, 3,734,848.
Fay, Clarence C. Floating caliper assembly for distribution of brake shoe thrust in dual hydraulic brake system. 3,734,248, Cl. 188-345.000.
Feeders Corporation: *See—*
Morgan, Wendell D., 3,734,589.
Fein, Marvin M.: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,780.
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,781.
Bellisto, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,779.
Feldman, Edward, to McGraw-Edison Company. Cassette with index mechanism for magnetic tape dictating machine. 3,734,052, Cl. 116-114.000.
Feldman, Martin, to Bell Telephone Laboratories, Incorporated. Optical raster-to-line converter. 3,734,599, Cl. 350-190.000.
Felix, Gerardus L.: *See—*
Bennett, Frank C.; and Felix, Gerardus L., 3,734,158.
Fengler, William W.: *See—*
Langer, Helmut; and Fengler, William W., 3,735,176.
Fenston, William M. Loose leaf binder. 3,734,634, Cl. 402-56.000.
Ferber, Dennis A. Stringed musical instrument with optoelectronic pickup sound amplifier. 3,733,953, Cl. 84-1.160.
Fernseh G.m.b.H.: *See—*
Schneider, Hans-Dieter, 3,735,030.
Ferramola, Gianni: *See—*

Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,735,132.
Ferranti Limited: *See—*
Walters, Frank, 3,735,183.
Ferrari, Sergio: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,735,132.
Ferraris, Enrico, to Officine Precisione Luserna S.p.A. Friction coupling, particularly for the collecting reel of a cinematographic projector or the like. 3,734,255, Cl. 192-36.000.
Ferrofluidics Corporation: *See—*
Rosensweig, Ronald E., 3,734,578.
Feuerlein, Karl: *See—*
Kreissig, Ernst Florian; and Feuerlein, Karl, 3,734,030.
Fiber Industries, Inc.: *See—*
Cook, Charles Wayne, 3,733,945.
Field, Lars. Slalom sled. 3,734,523, Cl. 280-16.000.
Field, Michael Frank, to Dominion Engineering Works, Limited. Mill roll changing arrangement. 3,733,877, Cl. 72-239.000.
Fields, Grover G., to Columbia Broadcasting System, Inc. Pedal guitar with selective string controlling arrangement. 3,733,954, Cl. 84-312.000.
Fields, Thomas Lynn: *See—*
Newman, Howard; and Fields, Thomas Lynn, 3,734,931.
Fietz, William A.; and Yenni, Donald M., to Union Carbide Corporation. Method of fabricating a superconducting coils. 3,733,692, Cl. 29-599.000.
Figueras, John; and Stern, Max H., to Eastman Kodak Company. Diffusible color coupler moieties are released from nondiffusible M-sulfoamido-anilines or M-sulfoamidophenols diffusion transfer photographic products and processes. 3,734,726, Cl. 96-3.000.
Fike, Roy Albert, to Owens-Illinois, Inc. Method of making glass articles. 3,734,704, Cl. 65-69.000.
Finberg, Raymond H.; Edelson, Robert B.; and De Sisto, Richard E., to Proctor-Silex Incorporated. Vacuum cleaner nozzle. 3,733,640, Cl. 15-402.000.
Fincham, Frederick D., to Owens-Illinois, Inc. Method and apparatus for producing and packaging sealed tubular glass bodies. 3,734,705, Cl. 65-87.000.
Finelli, Anthony F., to Goodyear Tire & Rubber Company, The. Polyurethane composition and method of its preparation. 3,734,880, Cl. 260-37.00n.
Finelli, Anthony F.; and West, James C., to Goodyear Tire & Rubber Company, The. Method of controlling reaction of polyisocyanate with polyamine. 3,734,894, Cl. 260-32.80n.
Finley, Carl E. Odometer. 3,735,103, Cl. 235-95.00a.
Finley, George R.: *See—*
Dever, James A.; Tenan, Harry D.; and Finley, George R., 3,734,536.
Finney, Robert R.; Luckenbill, Lawrence F.; and Kissell, Gerry E., to Mueller Co. Method of tapping a hole in a main through a fitting. 3,734,112, Cl. 137-15.000.
Firth Cleveland Extrusions, Limited: *See—*
Beard, Albert, 3,734,156.
Fischer & Kreck KG: *See—*
Erk, Amir; Tessmann, Ottomar; and Schirrich, Klaus, 3,734,395.
Fischer & Porter Co.: *See—*
Herzl, Peter J., 3,733,897.
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method for controlling unwanted plant growth. 3,734,712, Cl. 71-120.000.
Fischer, Artur. Expansion anchor. 3,733,959, Cl. 85-75.000.
Fischer, Harry C.: *See—*
Bloxham, Alden T.; and Fischer, Harry C., 3,734,174.
Fishbein, Meyer. Battery powered orthopedic cutting tool. 3,734,207, Cl. 173-163.000.
Fisher, Gerald E.: *See—*
Wright, Donald J.; and Fisher, Gerald E., 3,735,273.
Fisher, James G., Jr., to Union Carbide Corporation. Display tray. 3,734,279, Cl. 206-65.00r.
Fishkin, Bruce I.; and Taylor, John J., to Sperry & Hutchinson Company. Dual value document. 3,734,544, Cl. 283-56.000.
Fister, Karoly G. Low cost universal battery charger for small type nickel-cadmium or alkaline batteries. 3,735,232, Cl. 320-2.000.
Fitzgibbons, William O.; Schwerko, Elaine M.; and Brainard, Allan H., to Standard Oil Company, The. Deep well disposal process for acrylonitrile process waste water. 3,734,943, Cl. 260-465.300.
Fitzwater, Edwin: *See—*
Battaglia, Patrick A.; and Fitzwater, Edwin, 3,735,172.
Flex-O-Lators, Inc.: *See—*
Platt, John G.; and Isaacs, Robert O., 3,733,625.
Flexicore Co., Inc., The: *See—*
Scott, Norman L., 3,733,757.
Flider, Frank S., to Justrite Manufacturing Company, The. Modularly constructed plastic carbide lamp. 3,735,120, Cl. 240-11.100.
Flint, Edward F., to North American Rockwell Corporation. Dual color radiometer method selectively discriminating against a radiant energy emissivity characteristic of a preselected atmospheric state. 3,735,136, Cl. 250-83.30h.
Flinth, Rune Nils Allan: *See—*
Nordstrom, Kjell Helge; and Flinth, Rune Nils Allan, 3,734,216.
Flinth, Rune Nils Allan; Ahl, Nils Boran; Larsson, Lars Herbert; and Nordstrom, Kjell Helge, to Trancon AB. Weighing device. 3,734,217, Cl. 177-163.000.
Florjancic, Peter. Process for the fabrication of a link chain. 3,733,811, Cl. 59-35.000.
Fluidrive Engineering Company, Limited: *See—*
Bilton, John, 3,733,821.
Flynn, Wilford. Master ratchet with quick action dual drive. 3,733,936, Cl. 81-58.000.
FMC Corporation: *See—*
Gresham, John Thomas, 3,734,687.
Keogh, James R., Jr., 3,734,776.
Knopka, William N., 3,734,891.
Seglin, Leonard; and Gray, Charles A., 3,734,716.
Seglin, Leonard; and Gray, Charles A., 3,734,717.
Fodor, Lawrence M., to Phillips Petroleum Company. Polymerization process and catalyst system. 3,734,899, Cl. 260-93.700.
Foerstner, George C., to Amana Refrigeration, Inc. Run time meter installation for microwave ovens. 3,735,081, Cl. 219-10.550.
Fong, Leong Quock, to Bangor Punta Operations, Inc. Air conveyor for flat thin articles. 3,734,567, Cl. 302-2.00r.
Food Technology, Inc.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergois, 3,734,672.
Foody, Patrick. Conveyor belt. 3,734,270, Cl. 198-184.000.
Ford Motor Company: *See—*
Duffy, James J., 3,733,967.
Kukla, Cassimer M.; and Warnick, Alan, 3,734,691.
Foreman, Kenneth C. Logging barge. 3,734,045, Cl. 114-.50r.
Formica Corporation: *See—*
Kelly, Peter Bernard; and Oliver, Jay Thomas, 3,734,807.
Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., to United States of America, Army. Continuous melt-pour process for high explosives. 3,734,983, Cl. 264-3.00c.
Forster, Bernhard, Firma: *See—*
Murle, Kurt, 3,733,806.
Fort, Johnny L.; and Frederick, Cecil S., to Cutters Machine Company, Inc. High-speed control apparatus for cloth spreading machine. 3,735,223, Cl. 318-258.000.
Foss, George J., to Anchor Hocking Corporation. Composite cap with pull-out panel. 3,734,333, Cl. 215-46.00a.
Foster, Eric: *See—*
Bonis, David Raynes; and Foster, Eric, 3,735,021.
Foster, John; and Wilson, Geoffrey, to Massey, B. & S., Limited. Forging presses with ejector means. 3,733,884, Cl. 72-429.000.
Foster, Thomas H., Jr.: *See—*
Lucker, Jerome; Oakes, Andrew A.; and Foster, Thomas H., Jr., 3,734,692.
Fourrey, Francois, to Regie Nationale des Usines Renault and Automobiles Peugeot. Automotive seats with safety harnesses. 3,734,562, Cl. 297-216.000.
Fowler, Oliver E. Kindling apparatus. 3,734,034, Cl. 110-1.00f.
Fox, D. Marshall: *See—*
Urbanic; John M.; Fox, D. Marshall; and Panian, Frederick C., 3,735,084.
Fox, Edward I.; and Fullem, Raymond J., to Crane, H. W., Company. Door operating mechanism. 3,733,747, Cl. 49-30.000.
Fox, James E., to Diamagnetics, Inc. Rear screen projection device provided with luminous markings. 3,735,133, Cl. 250-72.000.
Fox, Ralph W. Security system for a vehicle. 3,735,346, Cl. 340-63.000.
Frakes, James H.: *See—*
Hess, Robert L.; and Frakes, James H., 3,735,019.
Fraley, Richard W., to PPG Industries, Inc. Cycloalkyl carbamates. 3,734,945, Cl. 260-468.00e.
Franke, Rudiger: *See—*
Tax, Hans; and Franke, Rudiger, 3,734,555.
Franklin Electric Co., Inc.: *See—*
Whitney, John A.; and Sorensen, Peter F., 3,735,347.
Franklin, John Warrender. Load handling vehicles. 3,734,224, Cl. 180-66.00r.
Franklin-Cowan Paper Co., Inc.: *See—*
Cowan, Harold L., 3,734,396.
Franz, Peter; and Maier, Andreas, to Buss A.G. Apparatus for the preparation of solid intermediates of polyaddition resins in the form of connected pieces useful for breaking and grinding. 3,734,415, Cl. 241-65.000.
Fraser, Robert W.: *See—*
Kushnir, Bud W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David J. I., 3,734,713.
Fraze, Ermal C.: *See—*
Schubert, James R., 3,734,338.
Frederick, Cecil S.: *See—*
Fort, Johnny L.; and Frederick, Cecil S., 3,735,223.
Frederick, Leonard L. Bottom brace for hammer leads frame. 3,734,435, Cl. 248-2.000.
Frederiksen, Thomas M.: *See—*
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,735,240.
Frederiksen, Thomas M.; and Russell, Ronald W., to Motorola, Inc. Output circuit for comparators. 3,735,151, Cl. 307-235.00r.
Freeman, H., & Son, Incorporated: *See—*
Jaffee, Wilton, 3,733,615.
Freeman Supply Company, The: *See—*

Rusk, Gerald R.; and Koch, Robert E., 3,734,448.
Frewen, David. Centrifugal separator. 3,734,401, Cl. 233-20.00r.
Frey, Sydney W., Jr.; and Gaines, Robert W., to Bourns, Inc. Method of making potentiometer terminations. 3,733,695, Cl. 29-610.000.
Friedrich, Karl-Dieter, to Schleicher GmbH & Co. Relaisbau KG. Holder for electrical and/or electronic components. 3,735,205, Cl. 317-100.000.
Frind, Gerhard; Korte, Richard M.; and Zlupko, John E., to General Electric Company. Arc chute for an electric circuit breaker. 3,735,074, Cl. 200-144.00c.
Frisk, Knut Olov, to AB Tico. Method and device for detachable coupling together of implement and vehicle. 3,734,319, Cl. 214-131.000.
Frisque, Alvin J.: *See—*
Anderson, Donald R.; and Frisque, Alvin J., 3,734,873.
Fritzsche, Harold L., to General Electric Company. Method for producing a protective coating on the surface of a manufactured article. 3,734,771, Cl. 117-234.000.
Fromm, Marvin M.: *See—*
Anderson, Robert L.; and Fromm, Marvin M., 3,735,168.
Fruchard, Elaine, nee Triquet: *See—*
Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, 3,735,373.
Fuji Heavy Industry Co.: *See—*
Akiyama, Yoshio; Sato, Tadanori; and Koyama, Shinobu, 3,734,069.
Fujie, Seijiro; and Saeki, Yoshifumi, to Pioneer Electronic Corporation. Protective circuit. 3,735,203, Cl. 317-27.00r.
Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Sheet cutting apparatus. 3,733,951, Cl. 83-484.000.
Fujita, Ryuzo. Cabinet for electronic communications apparatus. 3,735,041, Cl. 178-7.900.
Fukuda, Ernest T. Anchoring mechanism for flexible sheet structures. 3,734,443, Cl. 248-361.00r.
Fukugami, Goro; Tamura, Chiaki; Taguchi, Masayuki; and Maekawa, Kenichi, to Amada Company Limited. Automatic contour machine. 3,733,952, Cl. 83-789.000.
Fukuma, Yuji: *See—*
Arimura, Tohru; Okado, Masaru; Fukuma, Yuji; and Ido, Yoshimitsu, 3,733,866.
Fullem, Raymond J.: *See—*
Fox, Edward I.; and Fullem, Raymond J., 3,733,747.
Fullinwider, James H.: *See—*
Rhudy, John S.; Fullinwider, James H.; and Ver Steeg, David J., 3,734,183.
Funabashi, Tadao; and Murata, Kazuaki, to Shibaura Electric Co., Ltd., The. Distributor apparatus. 3,735,329, Cl. 339-89.00r.
Furukawa, Minoru: *See—*
Asano, Kazuo; Furukawa, Minoru; and Kanda, Nobuo, 3,735,006.
Gabler, Rudolf: *See—*
Studinka, Josef; and Gabler, Rudolf, 3,734,893.
Gach, Peter P., to Sunbeam Plastics Corporation. Child proof overcap and actuator for an aerosol can. 3,734,354, Cl. 222-153.000.
Gachot, Jean: *See—*
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, 3,734,131.
Gaenzler, Wolfgang: *See—*
Schroeder, Gunter; and Gaenzler, Wolfgang, 3,734,870.
GAF Corporation: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,780.
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,781.
Bellisto, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,779.
Gaines, Robert W.: *See—*
Frey, Sydney W., Jr.; and Gaines, Robert W., 3,733,695.
Galen, Ralph W. Protective enclosure for bicycle. 3,734,272, Cl. 206-1.00r.
Gallaer, Charles A., to Envirotech Corporation, mesne. Gas flow regulation for electric precipitators. 3,733,785, Cl. 55-129.000.
Gambro AG: *See—*
Riede, Gerhard; and Hagstrom, Olov, 3,734,298.
Games, John E.; and Casper, Clarence, Jr., to United Aircraft Corporation. Magnetic synchro angle resolver. 3,735,391, Cl. 340-347.0sy.
Ganellin, Charon Robin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,734,924.
Gang, Robert E.: *See—*
Kabler, Donald J.; Gang, Robert E.; and Reeser, William O., Jr., 3,735,306.
Gans, Francois F. Liquid-cooled, segmented glass laser. 3,735,282, Cl. 331-94.500.
Garcia, Jean-Claude, to Societe Nationale Industrielle Aerospatiale. Helicopter rotor pitch control system. 3,734,644, Cl. 416-114.000.
Gardner-Denver Company: *See—*
Edstrom, Soren E. H.; and Seckman, John E., 3,734,653.
Garner, Lue O. Product vending apparatus. 3,734,345, Cl. 221-81.000.
Garrigue, Sylvette M.: *See—*
Gelin, Lysiane G.; and Garrigue, Sylvette M., 3,734,203.
Garrison, Harold Keith, to Hesston Corporation. Press for uninterrupted filling of stack forming wagons. 3,733,798, Cl. 56-350.000.
Garrison, William H., to American Spin-A-Batch Company. Spin centrifuge baskets. 3,734,337, Cl. 220-22.000.
Garrusta, Don Jaime Prenafeta: *See—*
Javaloy, Don Jose Manuel Jara; and Garrusta, Don Jaime Prenafeta, 3,733,653.
Gasparri, Mario, to Billi, G., & C. S.p.A. Feed system of a resiliently elongated yarn in hosiery machines and especially in a stocking machine. 3,733,858, Cl. 66-140.00r.
Gates Rubber Company, The: *See—*
Hug, Leonard F.; Grossman, Phillip A.; Young, Roland L.; and Stark, Robert E., 3,734,778.
Gatwood, Robert K.: *See—*
Weintraub, Arthur; Cook, Wendell A.; Gatwood, Robert K.; and De Brosse, Kenneth L., 3,735,344.
Gaud, Robert. Contraceptive device. 3,734,089, Cl. 128-130.000.
Gaudin, Jean Joseph, to LABAZ. Press for a deformable bag. 3,734,351, Cl. 222-103.000.
Gauthier, Donald E.; and Jones, William V., to Donald Engineering Company, Inc. Bulk bin level indicator. 3,734,313, Cl. 214-17.0ca.
Gebr. Bohler & Co., AG: *See—*
Strohmeier, Harald, 3,734,472.
Gebruder Junghans G.m.b.H.: *See—*
Wolber, Robert; King, Josef; and Kern, Eckhart, 3,733,808.
Gebruder Junghans G.m.b.H., Firma: *See—*
Kaiser, Paul; and Weber, Rudolf, 3,734,023.
Gedge, Burton H., III, to Procter & Gamble Company, The. Process for making carboxymethyl cellulose carriers for bluing and fluorescers. 3,734,759, Cl. 106-193.000.
Geiger, Lewis J., Jr.: *See—*
Estes, James W.; Geiger, Lewis J., Jr.; and Shepherd, Thomas L., 3,734,719.
Gelbard, Robert B., to General Electric Company. Refrigerator temperature control. 3,733,841, Cl. 62-180.000.
Gelin, Lysiane G.; and Garrigue, Sylvette M. Machine for striking floor coverings. 3,734,203, Cl. 173-117.000.
General Dynamics Corporation: *See—*
Kalitinsky, Andrew; and Crooks, James W., Jr., 3,735,139.
General Electric Company: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,733,960.
Baker, Fred E., 3,735,091.
Balke, Roy Leonard; and Cipriani, Domenico, 3,735,169.
Bergeron, John A., 3,734,358.
Bock, John W.; and Sivertsen, Marvin L., 3,735,130.
Bovenkerk, Harold P., 3,735,321.
Christie, George, Jr., 3,734,877.
Coho, Owen C.; and General Electric Company, 3,733,669.
Downs, Clifford L.; and Blackburn, Richard D., 3,735,243.
Frind, Gerhard; Korte, Richard M.; and Zlupko, John E., 3,735,074.
Fritzsche, Harold L., 3,734,771.
Gelbard, Robert B., 3,733,841.
Guth, Lauren W., 3,734,416.
Hall, Homer H., 3,735,088.
Hull, Thomas Neil, Jr.; and Klug, Anton, 3,733,814.
Hurtle, Ralph L., 3,735,309.
Martin, Robert L.; and Mellyn, Lawrence P., 3,735,118.
Mc Coy, John J., 3,734,694.
Miller, David E., 3,735,387.
Palmer, Ansell W., 3,735,259.
Perkins, Alan Vincent, 3,734,646.
Piscitelli, Vincent Americo, 3,734,580.
Ripley, Charles C., 3,734,824.
Wyland, Alvin D., 3,734,676.
General Foods Corporation: *See—*
Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,734,745.
General Motors Corporation: *See—*
Agarwal, Paul D.; Johnston, Richard W.; and Neuman, John G., 3,735,207.
Annis, Robert E., 3,733,920.
Annis, Robert E.; and Cheek, Forrest R., 3,734,251.
Bennett, Frank C.; and Felix, Gerardus L., 3,734,158.
Campbell, David D., 3,733,972.
Clarkson, Frederick C., Jr., 3,734,460.
Kauppila, James E., 3,733,685.
Mc Namee, James W., 3,735,378.
Nelson, Robert E., 3,735,274.
Pryjmak, Bohdan I., 3,735,222.
Roesner, Bruce B., 3,735,257.
Shellhause, Ronald L., 3,735,067.
Short, Frederick R., 3,734,639.
Sloan, Clark E., Jr., 3,735,311.
General Radio Company: *See—*
Miller, Charles E., 3,735,238.
General Signal Corporation: *See—*
Halmi, Dezsoe, 3,733,901.
Halmi, Dezsoe, 3,733,902.
Halmi, Dezsoe, 3,733,903.
Smith, Willis R., 3,734,434.
General Signal Corporation, The: *See—*
Battaglia, Patrick A.; and Fitzwater, Edwin, 3,735,172.
General Tire & Rubber Company, The: *See—*
Uelzmann, Heinz; and Maxey, Edwin M., 3,734,868.
Genta, Guido R.; and American Aniline Products, Inc., to Arylthioanthraquinones. 3,734,933, Cl. 260-371.000.
Geomet Mining and Exploration Company, mesne: *See—*
Milly, George H., 3,734,489.

George, David John: *See*—
Roberts, Donald Lee; and George, David John, 3,734,626.
Gerighausen, Werner; Heimbrecht, Bernhard; and Perthen, Johannes, to Perthen, Johannes. Motor driven surface measuring apparatus. 3,735,230, Cl. 318-637.000.
Germanis, Raits. Board game apparatus. 3,734,505, Cl. 215-130.00r.
Gershberg, David N.; and Lee Alex Y., to E-System, Inc. Electromagnetic wave receiver. 3,735,409, Cl. 343-113.00r.
Gerson, Samuel L., to Restaurant Equipment Design Co. Onion peeler. 3,734,003, Cl. 99-588.000.
Gervais AG: *See*—
Korner, Horst, 3,734,274.
Gesellschaft Kernforschung m.b.H.: *See*—
Bosch, Lothar; and Blocher, Hans-Joachim, 3,735,174.
Getchell, Edward H., to Signatron, Inc. Alarm signalling network. 3,735,396, Cl. 340-413.000.
Geyer, William J., Jr. Apparatus for cutting used pneumatic tire casing. 3,733,941, Cl. 82-59.000.
Ghys, Theofiel Hubert: *See*—
Poot, Albert Lucien; Van Besauw, Jan Frans; and Ghys, Theofiel Hubert, 3,734,733.
Gibbs, John H.: *See*—
Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H., 3,734,784.
Gichner Mobile Systems, Inc.: *See*—
Ciccarelli, William E.; and Kaufman, Phillip A., 3,734,524.
Gil-Arnao, Francisco C.: *See*—
Larsen, Edwin M.; and Gil-Arnao, Francisco C., 3,734,689.
Gilardino, Paolo: *See*—
Masino, Carlo; and Gilardino, Paolo, 3,734,992.
Giles, Joan P.: *See*—
Krugman, Saul; Giles, Joan P.; and Hammond, Jack, 3,735,004.
Gill, George H., to United States of America, Navy. Direct current motor starter circuit. 3,735,227, Cl. 318-394.000.
Gillingham, Ernest Lee, to Jet Research Center, Inc. Explosive assembly for restoring damaged casing. 3,734,018, Cl. 102-20.000.
Gingrass, Robert J. Board game apparatus. 3,734,506, Cl. 273-130.00e.
Ginn, David W.: *See*—
Ott, Owen J.; and Ginn, David W., 3,735,416.
Girard, Pierre, to Manufacture des Montres Rolex S.A. Bienne. Timepiece with electronically designed digital read-out. 3,733,810, Cl. 58-4.00a.
Girauldon, Jean-Claude, to Societe Anonyme D.B.A. Composite caliper for a disc brake. 3,734,243, Cl. 188-72.400.
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergois, to Food Technology, Inc. Extrusion die for dough. 3,734,672, Cl. 425-462.000.
Glanzer, Stefan, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Apparatus for oiling continuously moving stock. 3,734,055, Cl. 118-8.000.
Glaser, Karl; and Stengle, Ernst, to EBE Elektro-Bau-Elemente GmbH. Sliding switch assembly with spring-biased contact and multi-sectional housing. 3,735,059, Cl. 200-16.00c.
Glass, Marvin, & Associates: *See*—
Breslow, Jeffrey D., 3,734,503.
Breslow, Jeffrey D., 3,734,504.
Breslow, Jeffrey D., 3,734,510.
Glass, Marvin I.; and Dunn, Kathy A., 3,734,509.
Terzian, Rouben T., 3,733,739.
Terzian, Rouben T., 3,733,742.
Glass, Marvin I.; and Dunn, Kathy A., to Glass, Marvin, & Associates. Invisible indicia matching and display device. 3,734,509, Cl. 273-139.000.
Glenat, Henri; and Salvi, Antoine, to Commissariat a l'Energie Atomique. Spin-coupling nuclear magnetic resonance magnetometer utilizing the same coil for excitation and signal pick-up and using toroidal samples. 3,735,246, Cl. 324-.50r.
Glesner, William K.; and Thompson, Clifford E., to Dow Chemical Company, The. Process for the manufacture of corrugated glass fiber reinforced polyvinyl chloride sheets. 3,734,990, Cl. 264-137.000.
Glessner, Lee S., Sr. Bubble blowing toy gun. 3,733,736, Cl. 46-7.000.
Glintz, Georgia E. Collapsible bed shampoo basin with throw away liner. 3,733,620, Cl. 4-159.000.
Global Marine Inc.: *See*—
Michaelsen, Randolph C. H., 3,734,048.
Globe-Union Inc.: *See*—
Ringle, Richard Bertrem, 3,735,233.
Glockler, Otto; Schmid, Hermann; and Eichler, Dieter, to Bosch, Robert, G.m.b.H. Fuel injection system for internal combustion engine. 3,734,067, Cl. 123-32.0ea.
Gnage, Oliver W.: *See*—
Harvey, James E.; and Gnage, Oliver W., 3,734,612.
Godard, Pierre, to Societe des Accumulateurs Fixes et de Traction. Apparatus for recharging an emergency battery. 3,735,234, Cl. 320-44.000.
Goetze, Gerhard W.; and Beyer, Rolf R., to Westinghouse Electric Corporation. Television pick-up tube device. 3,735,032, Cl. 178-5.4st.
Gogarty, William B., to Marathon Oil Company. Hydraulic fracturing process using a temperature-inverted fracturing fluid. 3,734,189, Cl. 166-308.000.
Golbe, Alvin Victor, to Clairol Incorporated. Electric skin hygiene brush. 3,733,634, Cl. 15-28.000.
Goldberg, Edward M.: *See*—
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., 3,734,100.
Goldman, Alvin. Apparatus and method for testing a multi-terminal logic circuit capable of retesting fixed and intermittant faults. 3,735,255, Cl. 324-73.00r.
Goldstein, Abe: *See*—
Whitnah, Richard G.; and Goldstein, Abe, 3,735,411.
Goldstein, Arnold M.; Effron, Edward; and Hochman, Jack M., to Esso Research and Engineering Company. Reactor vessel and up-down mixer. 3,734,469, Cl. 259-8.000.
Goldstein, Frederick A. Racket with resilient surface. 3,734,499, Cl. 273-73.00e.
Goldsworthy Engineering, Inc.: *See*—
Karlson, Harald; Goldsworthy, William B.; and Hegyi, Tim T., 3,734,421.
Goldsworthy, William B.: *See*—
Karlson, Harald; Goldsworthy, William B.; and Hegyi, Tim T., 3,734,421.
Golovistikov, Jury Nikolaevich. Apparatus for injecting a sample into a gas chromatograph. 3,733,909, Cl. 73-422.0gc.
Golovko, Vladimir Nikolaevich: *See*—
Pokhodnya, Igor Konstantinovich; and Golovko, Vladimir Nikolaevich, 3,735,090.
Gonthier, Beatrice: *See*—
Makula, Daniel; and Gonthier, Beatrice, 3,734,908.
Gooch, John Henry. Resilient railway vehicle transmission. 3,734,029, Cl. 105-131.000.
Goodfellow, Robert D., to Kennametal Inc., mesne. Rotary cutter for excavation, especially for use with raise boring and tunnel boring machines. 3,734,213, Cl. 175-374.000.
Gooding, Trevor Frank John; and Howse, Geoffrey David Stuart, to Elestrosil Limited. Adjustable electrical devices with leadscrew and sealing means. 3,735,326, Cl. 338-180.000.
Goodman, Charles Jimmie. Navigational aid. 3,733,708, Cl. 33-355.000.
Goodman, H., & Sons, Inc.: *See*—
D'Apuzzo, Louis, 3,733,851.
Goodman, Harold. Toy airplane. 3,733,737, Cl. 46-79.000.
Goodrich, Eugene A.; and Johnson, Robert H. Economical automatic balancer for rotating masses. 3,733,923, Cl. 74-573.000.
Goodsir, Stephen W.: *See*—
Schneller, George H.; Levi, Ralph S.; Levin, Howard J.; and Goodsir, Stephen W., 3,734,098.
Goodyear Tire & Rubber Company, The: *See*—
Aylies, Sargeant E.; Hillhouse, Mial T.; Kyriakis, Alexander; and Pengilly, Brian W., 3,734,866.
Byers, Clifton A., 3,734,797.
Finelli, Anthony F., 3,734,880.
Finelli, Anthony F.; and West, James C., 3,734,894.
Throckmorton, Morford C., 3,734,900.
Gordon, Lester. Camera film imaging device. 3,733,985, Cl. 95-1.100.
Gordon, Richard O., to Harnischfeger Corporation. Speed control system for hydraulic motor. 3,733,813, Cl. 60-393.000.
Gordon, Ronald H.: *See*—
Barker, Graham; and Gordon, Ronald H., 3,734,858.
Gorman, Paul T.: *See*—
Small, Augustus B.; Gorman, Paul T.; and McGarry, Frederick J., 3,734,811.
Goss, Edward W.: *See*—
Hickner, Richard A.; and Goss, Edward W., 3,734,968.
Goss, Steven A.: *See*—
Camis, Thomas; and Goss, Steven A., 3,734,015.
Grabowski, Edward Benedict: *See*—
Secresty, Anthony Vincent; and Grabowski, Edward Benedict, 3,734,238.
Grace, W. R., & Co.: *See*—
Bailey, Robert J., 3,734,725.
Grachev, Leonid Pavlovich: *See*—
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich, 3,733,774.
Graflex, Inc.: *See*—
Deck, Howard C., 3,734,602.
Grainger, Lewis M. D. Antipollution jet engine with reversible auxiliary jet engines operable independently to serve as auxiliary thrusters and brakes. 3,733,824, Cl. 60-224.000.
Gram, Hans, to Brodrene Gram A/S. Annular table for a rotating freezing apparatus. 3,733,846, Cl. 62-345.000.
Granite State Machine Company, Inc.: *See*—
Richer, Donald R., 3,734,261.
Grant, Norman H.: *See*—
Wendt, Gerhard R.; Clark, Donald E.; and Grant, Norman H., 3,734,904.
Grau, Werner: *See*—
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.
Gray, Charles A.: *See*—
Seglin, Leonard; and Gray, Charles A., 3,734,716.
Seglin, Leonard; and Gray, Charles A., 3,734,717.
Gray, R. A., Jr., and Montague, Frank D., Jr.: *See*—
Hill, Fred D.; Hill, Fred J.; and Hill, Stanley L., 3,733,718.
Gray Tech Industries, Inc.: *See*—
Sticker, Charles W., Jr., 3,733,831.
Great Western Sugar Company, The: *See*—
Smith, James M., 3,734,215.

Greco, Carl C.; and Martin, Donald J., to Stauffer Chemical Company. Plasticized sulfur compositions. 3,734,753, Cl. 106-19.000.

Green Ball Bearing Company, The: *See—*
Dever, James A.; Tenan, Harry D.; and Finley, George R., 3,734,536.

Greenberg, Walter H. Glass fiber reinforced thermoplastic cellular plastics. 3,734,985, Cl. 264-45.000.

Greene, Oliver W., III. Display and shipping container for flowers. 3,734,275, Cl. 206-45.310.

Greenwald, Harry; and Kidde, Walter, & Company, Inc., to Anti-pick tumbler lock device. . 3,733,864, Cl. 70-363.000.

Greenwald, Harry; and Tuppo, Robert, to Kidde, Walter, & Company, Inc. Switching device for a coin controlled machine. 3,735,066, Cl. 200-52.00r.

Gregoire, Clyde G. Roller bender for outset printing plates. 3,733,872, Cl. 72-213.000.

Grelck, Leonard. Fork lift truck tines. 3,734,329, Cl. 214-750.000.

Grennan, Charles W.: *See—*
Nash, John E.; and Grennan, Charles W., 3,733,816.

Gresham, John Thomas, to FMC Corporation. Fabric finished with a fluorinated nary salts thereof quarternized halomethyl ether. 3,734,687, Cl. 8-188.000.

Griebsch, Eugen: *See—*
Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen, 3,734,871.

Griesinoer, Wolfram, to Kabel- und Metallwerke Gutehoffnugshutte Aktiengesellschaft. Supercooled electric cable. 3,735,018, Cl. 174-28.000.

Griffith, David W., to Lindsay Wire Weaving Company, The. Patch and seam for plastic belts. 3,734,795, Cl. 156-98.000.

Griffith, Edwin D., to Owens-Illinois, Inc. Easy-open composite container. 3,734,343, Cl. 220-47.000.

Griffiths, Victor Sidney; and Howes, Roynon. Instrument for determining the optical density of fluids. 3,734,629, Cl. 356-201.000.

Grigorenko, Donald O., to Shape Form, Inc. Method and apparatus for making deep drawn metal shells. 3,733,881, Cl. 72-349.000.

Grishenkov, German Ivanovich: *See—*
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich, 3,734,227.

Grolig, Johann: *See—*
Scharfe, Gerhard; Swodenk, Wolfgang; Grolig, Johann; and Martin, Manfred, 3,734,950.

Gross, Arthur P.: *See—*
Pearl, Donald C.; and Gross, Arthur P., 3,733,840.

Gross, Josef; and Barkow, William Henry, to RCA Corporation. Color television deflector yoke having reduced variation in beam trio distortion. 3,735,299, Cl. 335-213.000.

Grossman, Phillip A.: *See—*
Hug, Leonard F.; Grossman, Phillip A.; Young, Roland L.; and Stark, Robert E., 3,734,778.

Grotta, Henry M.: *See—*
Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H., 3,734,784.

Grubbs, William J.: *See—*
Barnhardt, Robert W.; and Grubbs, William J., 3,733,906.

Grulich, Norman H. Safety closure. 3,734,332, Cl. 215-9.000.

Grunert, Kurt A.; Conner, John P.; and Dauer, John J., Jr., to Westinghouse Electric Corporation. Electric control devices with mechanical interlock. 3,735,295, Cl. 335-160.000.

Grygera, James W., to Eaton Corporation. Motor control system with power failure protector. 3,735,202, Cl. 317-13.00r.

GTE Automatic Electric Laboratories Incorporated: *See—*
Stigviis, Albert Charles, 3,735,245.

GTE Sylvania Incorporated: *See—*
Say, Donald L., 3,735,190.
Shaffer, John W., 3,735,111.

Guardian Electric Manufacturing Company: *See—*
Obszarny, Theodore J., 3,735,296.

Gude, Fritz: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,734,887.

Gudovich, Alexandr Markovich: *See—*
Dolgolenko, Anatoly Alexandrovich; Onokhov, Pavel Pavlovich; Makhover, Jury Meerovich; and Gudovich, Alexandr Markovich, 3,734,271.

Guest, Pal R.; and Kontz, Robert F., to Owens-Illinois, Inc. Part removal apparatus. 3,734,666, Cl. 425-186.000.

Guillaud, Michel Pierre Cyrille, to Societe d'Etudes et de Construction de Materiel Electrique et Radioelectrique S.E.C.M.E.R. Rotary molding machine. 3,734,665, Cl. 425-174.000.

Gulf & Western Industrial Products Company: *See—*
Heniser, Eugene W.; and Hook, Bernard K., 3,734,042.
Mueller, Arthur Thomas, 3,734,265.

Gumtau, Hans Dieter; and Kowarsch, Rainer, to Daimler-Benz Aktiengesellschaft. Displacement pick-up. 3,735,244, Cl. 323-51.000.

Gupta, Virendra N.; and Lafond, Renald L., to Canadian International Paper Company. Flameproofing of cellulose. 3,734,683, Cl. 8-116.00r.

Gurchot, Charles: *See—*
McNaughton, Andrew; Krebs, Ernst T.; and Gurchot, Charles, 3,734,902.

Gureckis, Peter V.: *See—*
Karaganis, James J., 3,735,265.

Gustafson, August W. Ball cleaning apparatus. 3,733,633, Cl. 15-21.00a.

Gustafson, Richard N: *See—*
Anderson, David W.; Gustafson, Richard N; Johnson, Lance H.; and Sparacio, Francis J., 3,735,360.

Guth, Lauren W., to General Electric Company. Waste food disposer mounting assembly. 3,734,416, Cl. 241-100.500.

Gutierrez, Thomas; and Amaral, Wallace. Article abrading apparatus. 3,734,700, Cl. 51-61.000.

Gyongyosi, Laszlo. Automatic feed control system. 3,734,202, Cl. 173-4.000.

H & G Industries, Inc.: *See—*
Kaplan, Ronald M., 3,733,638.

Haans, Petrus Franciscus Antonius: *See—*
Bouwhuis, Gijsbertus; Haans, Petrus Franciscus Antonius; and Peek, Theodorus Hendrikus, 3,735,281.

Haas, Helmut; and Siedler, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and arrangement for performing low-temperature grinding operations in a vibrating mill. 3,734,412, Cl. 241-15.000.

Haas, Richard G.: *See—*
Buttery, Kenneth T.; and Haas, Richard G., 3,734,390.

Hach Chemical Company: *See—*
Andersen, Marinus Leland, 3,735,242.

Hackman, Lloyd E.; and Mobley, Carroll E., to Ribbon Technology Corporation. Method of making metal fiber reinforced metal matrix products. 3,734,762, Cl. 117-37.00r.

Hagnauer, Waldo W. Heat exchanger assembly having a common fluid box. 3,734,176, Cl. 165-158.000.

Hagopian, Nubar D.: *See—*
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,734,087.

Hagstrom, Olov: *See—*
Riede, Gerhard; and Hagstrom, Olov, 3,734,298.

Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, to Bucyrus-Erie Company. Well drilling rod and casing assembling method. 3,734,209, Cl. 175-57.000.

Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, to Bucyrus-Erie Company. Mobile drilling unit. 3,734,211, Cl. 175-85.000.

Hale, Chester A. Drive on no slip block. 3,734,241, Cl. 188-32.000.

Hales, John H. Dry cleaning machine. 3,733,715, Cl. 34-82.000.

Haley, Boyd E. Process for selectively purifying sugar beet diffusion juice and by-product recovery of valuable organic acids therefrom. 3,734,773, Cl. 127-48.000.

Hall, Homer H., to General Electric Company. Brazing method and apparatus. 3,735,088, Cl. 219-85.000.

Hall, Jeffrey, to Houdaille Industries, Inc., mesne. Torsional vibration damper. 3,734,484, Cl. 267-137.000.

Halmi, Dezsoe, to General Signal Corporation. Flow metering device of the pressure differential producing type. 3,733,901, Cl. 73-213.000.

Halmi, Dezsoe, to General Signal Corporation. Minimum length high quality differential pressure producing flow meter. 3,733,902, Cl. 73-213.000.

Halmi, Dezsoe, to General Signal Corporation. Differential pressure producing flow meter. 3,733,903, Cl. 73-213.000.

Halpern, Alfred; and Sasmor, Ernest J., to Synergistics, mesne. Deproteinizing protein-containing solutions. 3,734,734, Cl. 99-48.000.

Halvin Products Co., Inc.: *See—*
Horvath, Tibor, 3,734,853.

Hamilton, Billy Harold; and Wilhart, Helmut, to Bell Telephone Laboratories, Incorporated. DC to DC converter with voltage regulation feedback hoop achieving isolation between input and output by time domain techniques. 3,735,235, Cl. 321-2.000.

Hamilton, Joel A., to Jones, R. A., & Company, Inc. Apparatus including reciprocating web feeding means for a continuously feeding web. 3,733,773, Cl. 53-184.000.

Hammann, Ingeborg: *See—*
Lorenz, Walter; and Hammann, Ingeborg, 3,734,914.

Hammes, Paul A.: *See—*
Morse, Lewis D.; and Hammes, Paul A., 3,734,742.

Hammon, Fritz: *See—*
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.

Hammond, Jack: *See—*
Krugman, Saul; Giles, Joan P.; and Hammond, Jack, 3,735,004.

Hamrin, Bjorn Staffan Artur, to Aktiebolaget Forenade Superfosfatfabriker. Gel capsules for small units and methods of encapsulating such units. 3,734,987, Cl. 264-54.000.

Hancock Industries, Inc.: *See—*
Heesch, Max O., 3,733,748.

Handelman, Adele: *See—*
Ziener, Otto, 3,734,000.

Handler, Elliot: *See—*
Baynes, William R.; and Handler, Elliot, 3,734,404.

Handrick, G. Richard: *See—*
Razdan, Raj Kumar; and Handrick, G. Richard, 3,734,930.

Hanenkamp, Horst; and Wolken-Mohlmann, Helmut, to Olympia Werke AG. Arrangement for assembling two groups of components in a predetermined relative position. 3,735,304, Cl. 335-278.000.

Hanley, Donald E., to Red Devil Engineering, Inc. Racing vehicle wheel having improved cooling structure. 3,734,566, Cl. 301-6.0cs.

Hannon, Charles N.: *See—*
Hannon, Warren W.; and Hannon, Charles N., 3,734,488.

Hannon, Warren W.: *See—*

Hannon, Warren W.; and Hannon, Charles N. (said Hannon, Charles N., assor. to), 3,734,488.

Hannon, Warren W.; and Hannon, Charles N., said Hannon, Charles N., assor. to Hannon, Warren W. Mechanism for successively delivering sheet articles from a stack. 3,734,488, Cl. 270-58.000.

Hans, Gott: *See—*
Ritter, Klaus; Ritter, Josef; Ritter, Gerhard; and Hans, Gott, 3,734,383.

Hansel, William B., to Sun Oil Company. Refueling system for automobiles. 3,734,149, Cl. 141-350.000.

Hanson, Jonathan Leslie: *See—*
Bennett, Weston T.; Coveney, Donald B.; Lamb, Charles A.; and Hanson, Jonathan Leslie, 3,734,822.

Hansson, Ants, to Continental Can Company, Inc. Apparatus for and method of facilitating the stripping of cans from a punch and the article formed thereby. 3,733,880, Cl. 72-344.000.

Hanze, Arthur R.; deceased (by Hanze, Janice W.; administratrix), to Upjohn Company, The. Certain pyrimido(1,2-a)(1,4)benzodiazepin-1 (5H)-ones. 3,734,912, Cl. 260-256.50r.

Hanze, Janice W.: *See—*
Hanze, Arthur R., 3,734,912.

Harbison, Judith M.: *See—*
Kurtz, Donald W.; and Harbison, Judith M., 3,734,738.

Harden, Phillip L., to Bowmar Instrument Corporation. Rotary magnetic position indicator having odd number of positions. 3,735,303, Cl. 335-272.000.

Hardy, Leon: *See—*
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, 3,734,131.

Hardy, Pierre: *See—*
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, 3,734,131.

Harker, Wesley H., to Emme Company, The. Method and apparatus for measuring fat content in animal tissue either in vivo or in slaughtered and prepared form. 3,735,247, Cl. 324-34.00r.

Harman, Julius; and Norman, Michael Eric, to Herbert, Alfred, Limited. Lathes. 3,733,940, Cl. 82-21.00r.

Harmes, Lee D.: *See—*
Elgert, Albert H.; and Harmes, Lee D., 3,733,869.

Harmon, Paul E.; and Mainstone, Kenneth A., to Black Clawson Company, The. Flat film plastic extrusion apparatus. 3,734,662, Cl. 425-131.000.

Harms, David Christopher, to Plessey Handel und Investments A.G. Digital information storage unit having parallel stores and a control therefor. 3,735,051, Cl. 179-18.0eb.

Harnischfeger Corporation: *See—*
Gordon, Richard O., 3,733,813.

Harpe, Ralph W.; and Schrader, Henry S., to United States of America, Army. Orbital sumulation facility. 3,734,613, Cl. 355-47.000.

Harper-Wyman Company: *See—*
Shepherd, George Ronald, 3,735,308.

Harr, Jerome Danforth; and McMurtry, David Harwood, to International Business Machines Corporation. Manually operated bar coding scanning system. 3,735,142, Cl. 250-219.00d.

Harris, Leroy S., to K-G Industries, Inc. Drive means for material compacting apparatus. 3,734,659, Cl. 425-145.000.

Harris, Robert W., to United States of America, Navy. Low noise phase detector. 3,735,150, Cl. 307-232.000.

Harris-Intertype Corporation: *See—*
Bryson, Robert A.; Kennicott, Thomas C.; and Sarring, Ernest J., 3,733,947.
Treff, Ernest H., 3,734,487.

Hartline, Rolland L.; and Kramer, Charles E., to Clark Equipment Company. Pulse counting linear measuring device. 3,735,260, Cl. 324-175.000.

Hartstein, Jay M. Rotary pool slide with one-way brake. 3,734,492, Cl. 272-1.00b.

Hartwig, Karl: *See—*
Szostak, Noland; Hartwig, Karl; and Maurischat, Gunter, 3,734,604.

Hartzell Corporation: *See—*
Dahl, Christian W.; and Hartzell Corporation, 3,733,894.

Harvey, James E.; and Gnage, Oliver W., to Eastman Kodak Company. Number on print optical apparatus. 3,734,612, Cl. 355-40.000.

Hasegawa, Hiroaki: *See—*
Soya, Masahiro; Aizawa, Kensuke; and Hasegawa, Hiroaki, 3,733,896.

Hasekian, John. Sit-up exercise apparatus. 3,734,493, Cl. 272-84.000.

Hashioka, Noliyasu, to Hope Kabushiki Kaisha. Releasable ski boot heel binding. 3,734,520, Cl. 280-11.35t.

Hasselblad, Fritz Victor: *See—*
Tenne, Lave, 3,733,988.

Hasselfors Bruks Aktiebolag: *See—*
Ingerstedt, Sven; and Paabo, Max, 3,733,745.

Hastings, Donald R.: *See—*
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Hatchel, Charles Lee. Gas treatment apparatus and method. 3,733,782, Cl. 55-95.000.

Hatebur, F. B., AG: *See—*
Ballmer, Ernst, 3,733,873.

Hatta, Hiroshi; and Ishii, Yoshiteru, to Nippon Electric Company, Limited. Data handling system for handling data in compliance with normal and special descriptors. 3,735,364, Cl. 340-172.500.

Hatzmann, John F.: *See—*
Punt, Vernon E.; Van Neil, Charles G.; and Hatzmann, John F., 3,735,040.

Hauser, Charles Frank; and Lynn, John Wendell, to Union Carbide Corporation. Catalytic process for producing phthaloyl chlorides. 3,734,959, Cl. 260-544.00m.

Haws Drinking Fountain Company: *See—*
Wright, Allen C., 3,734,408.

Haxton, Claude S. House door latching device. 3,734,552, Cl. 292-67.000.

Hay, Gilbert, Jr.: *See—*
Bell, Hans K.; and Hay, Gilbert, Jr., 3,735,221.

Hayashi, Shigeki: *See—*
Komatsu, Koei; Hayashi, Shigeki; Ohishi, Akira; and Sakai, Mashato, 3,734,898.

Hayashi, Toshio; Maeda, Keisuke; and Ohta, Yoshiharu, to Minolta Camera Kabushiki Kaisha. Device for ascertaining charging on electronic flash unit. 3,733,986, Cl. 95-11.00v.

Hayashibara Company: *See—*
Hijiya, Hiromi; and Yoshida, Mikihiko, 3,734,760.
Miyake, Toshio; and Suzuki, Yukio, 3,734,828.

Hayes, Lester P.; and Simms, Ross P., to Staley, A.E., Manufacturing Company. Defatted soybean fractionation by solvent extraction. 3,734,901, Cl. 260-123.500.

Hayner, Paul F.; and Bernier, Edgar R., to Sanders Associates, Inc. Firing valve. 3,734,130, Cl. 137-596.100.

Haynes, Benjamin O.: *See—*
Abrams, Harold B.; Haynes, Benjamin O.; and Williams, Glynn P., 3,735,366.

Hays, John D.: *See—*
Touchman, William S.; and Hays, John D., 3,735,165.

Haythornthwaite, James, to Scapa Dryers (Canada) Ltd. Apparatus for and method of treating a web. 3,733,711, Cl. 34-23.000.

Hazel, Herbert K., to International Business Machines Corporation. Wiring apparatus with wire path forming means. 3,734,386, Cl. 228-5.000.

Headley, Verl E., to CPC International Inc. Processing cereal grains and seeds by a semi-dry milling method. 3,734,752, Cl. 99-233.300.

Heath Farm Equipment Inc.: *See—*
Rabb, Joseph C.; and Miller, Larry W., 3,733,795.

Hebner, Philip G. Spray cleaning system. 3,734,109, Cl. 134-64.000.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Altitude alerting apparatus. 3,735,341, Cl. 340-27.00r.

Heesch, Max O., to Hancock Industries, Inc. Multiple stage window regulator. 3,733,748, Cl. 49-103.000.

Heflinger, Lee Opert: *See—*
Wuerker, Ralph Frederick; and Heflinger, Lee Opert, 3,735,283.

Hege, Sanford L. Air release lid. 3,733,750, Cl. 49-379.000.

Hege, Sanford L. Sealed silo filling lid. 3,733,764, Cl. 52-192.000.

Hegyi, Tim T.: *See—*
Karlson, Harald; Goldsworthy, William B.; and Hegyi, Tim T., 3,734,421.

Heiba, El Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Substituted gamma-butyrolactones, amine derivatives thereof and organic fluids containing same. 3,734,865, Cl. 252-51.50a.

Heider, Stanley A.: *See—*
Christensen, Roland S.; and Heider, Stanley A., 3,735,170.

Heim Universal Corporation: *See—*
Rozentals, Alfreds R., 3,733,666.

Heimbrecht, Bernhard: *See—*
Gerighausen, Werner; Heimbrecht, Bernhard; and Perthen, Johannes, 3,735,230.

Heinz, David M., to North American Rockwell Corporation. Magnetic bubble domain system. 3,735,145, Cl. 307-88.01c.

Heiple, Danforth Kingsbury; Hillman, Danny Lee; Orth, Edward George; and Stueve, Paul Joseph, to Westinghouse Air Brake Company. Track for vehicles. 3,734,576, Cl. 305-37.000.

Heiress, Steven J., to Vapor Corporation. Temperature sensor. 3,735,322, Cl. 338-28.000.

Heiss, Louis Robert, to Baxter Laboratories, Inc. Flow cell assembly for colorimetric measurements. 3,734,601, Cl. 356-246.000.

Helbig, Helmut: *See—*
Schmedding, Herbert; and Helbig, Helmut, 3,734,849.

Helbig, Jim D. Boat with pivotally mounted detachable wheel assemblies. 3,733,628, Cl. 9-1.00t.

Helferich, Richard L.: *See—*
Zanis, Charles A.; and Helferich, Richard L., 3,734,480.

Heller Roberts Instruments Corporation: *See—*
Le Gault, Richard L.; and Andersson, Per Lennart, 3,734,010.

Helliker, Conrad Dean; and Wilkinson, Terry E., to La Barge, Inc. Alerting system responsive to a plural tone signal. 3,735,342, Cl. 340-34.000.

Hellstrom, Nils Erik: *See—*
Holmberg, Bo F.; and Hellstrom, Nils Erik, 3,734,150.

Hendrix Wire and Cable Corporation: *See—*
Slade, Harry Boone, 3,734,462.

Heniser, Eugene W.; and Hook, Bernard K., to Gulf & Western Industrial Products Company. Double expansion rectangular forming horn. 3,734,042, Cl. 113-8.000.

Henkel & Cie G.m.b.H.: *See—*
Sebel, Hans-Georg, 3,734,801.

Hennells, Ransom J., to Compactor Company, Inc., mesne. Waste disposal system. 3,734,006, Cl. 100-53.000.

Henneman, John W.: *See—*
Cramer, Robert L.; Henneman, John W.; and Myers, William P., 3,734,078.

Henriksen, Elmer C., to Bell & Howell Company. Mechanical film sensor. 3,734,425, Cl. 242-187.000.

Henrikson, Bror W.: *See—*
Barecki, Chester J.; and Henrikson, Bror W., 3,734,561.

Heraeus, W. C., GmbH: *See—*
Ziegler, Max, 3,734,722.

Herbert, Alfred, Limited: *See—*
Harman, Julius; and Norman, Michael Eric, 3,733,940.

Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., to Lockheed Aircraft Corporation. Flexible pipe connector. 3,734,546, Cl. 285-49.000.

Herbert, Leonhard, Maschinenfabrik: *See—*
Balle, Walter, 3,734,656.

Herpich, William A.; Park, Glenn S.; and Palmer, George W., to Peabody Galion Corporation. Refuse collecting vehicle. 3,734,317, Cl. 214-83.300.

Herr, Harry C. Cigarette lighter. 3,735,099, Cl. 235-91.00r.

Herzl, Peter J., to Fischer & Porter Co. Sensor assembly for vortex-type flowmeters. 3,733,897, Cl. 73-194.00b.

Hess, Robert L.; and Frakes, James H., to Westinghouse Electric Corporation. Flexible weather casing for a gas filled bushing. 3,735,019, Cl. 174-31.00r.

Hesston Corporation: *See—*
Garrison, Harold Keith, 3,733,798.

Hester, Jackson B., Jr., to Upjohn Company, The. 4,5-Di-hydropyrrolo[3,2,1-jk] [1,4] benzodiazepin-7(6H)-ones and 4,5-di-hydropyrrolo [1,2,3-ef] [1,5] benzodiazepin-6(7H)-ones. 3,734,919, Cl. 260-239.30t.

Hester, Jackson B., Jr., to Upjohn Company, The. Certain 4H-s-triazolo[4,3-a] [1,4] benzodiazepines. 3,734,922, Cl. 260-296.00t.

Hettich, Bernhard: *See—*
Mutz, Gerhard; Hettich, Bernhard; and Moser, Werner, 3,735,095.

Hewlett-Packard Company: *See—*
Justice, Gregory; and Loebner, Egon E., 3,734,631.
Moody, Robert E.; and Wilson, David A., 3,734,621.

Heyerdahl, Arthur Eugen. Fuse plug for electrical installations. 3,735,313, Cl. 337-268.000.

Hickey, Herbert P.: *See—*
Reiter, Eli; and Hickey, Herbert P., 3,733,809.

Hickey, Lionel Russell; and McCune, Ellsworth Jacob, to Eastman Kodak Company. Machine programmer. 3,734,608, Cl. 355-14.000.

Hickinbotham Bros. Ltd.: *See—*
Hickinbotham, Donald E., 3,734,312.

Hickinbotham, Donald E., to Hickinbotham Bros. Ltd. Steel bar storage rack unit and cooperating lifting device. 3,734,312, Cl. 214-16.40a.

Hickner, George B.; Slavin, Michael; and Howard, Donald W., to Bendix Corporation, The. Adaptive braking control system using peak wheel deceleration detector and initial high slip. 3,734,572, Cl. 303-21.0be.

Hickner, Richard A.; and Goss, Edward W., to Dow Chemical Company, The. Cyclohexyl thiol-dienes. 3,734,968, Cl. 260-609.00d.

Hightower, John D.; Conboy, Martin E.; and Phillips, Lawrence, to United States of America, Navy. Transporter for stretcher borne animals. 3,734,058, Cl. 119-3.000.

Hijiya, Hiromi; and Yoshida, Mikihiko, to Hayashibara Company. Process for the production of amylose films. 3,734,760, Cl. 106-210.000.

Hill, Alan E. Aerodynamic large volume gaseous electric discharge system. 3,735,284, Cl. 331-94.500.

Hill, Fred D.; Hill, Fred J.; and Hill, Stanley L., 15% each to Gray, R. A., Jr., and Montague, Frank D., Jr. Mathematical demonstration device. 3,733,718, Cl. 35-34.000.

Hill, Fred J.: *See—*
Hill, Fred D.; Hill, Fred J.; and Hill, Stanley L., 3,733,718.

Hill, Stanley L.: *See—*
Hill, Fred D.; Hill, Fred J.; and Hill, Stanley L., 3,733,718.

Hillhouse, Mial T.: *See—*
Aylies, Sargeant E.; Hillhouse, Mial T.; Kyriakis, Alexander; and Pengilly, Brian W., 3,734,866.

Hillman, Arnold R.; and Winckles, Harvey T. Board game apparatus. 3,734,507, Cl. 273-134.00a.

Hillman, Danny Lee: *See—*
Heiple, Danforth Kingsbury; Hillman, Danny Lee; Orth, Edward George; and Stueve, Paul Joseph, 3,734,576.

Hillmann, Paul: *See—*
Noack, Eolf; Kromer, Karl; and Hillmann, Paul, 3,733,990.

Hiltpold, John P.; and Soulakis, George, to Mattel, Inc. Power module for driving vehicle-propelling element, including stationary axle means mounting said element. 3,733,744, Cl. 46-243.00e.

Himler, Gary J.: *See—*
Cornell, Clark; Himler, Gary J.; and Ahlstrom, John F., 3,735,348.

Hindermann, Peter: *See—*
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,734,934.

Hiraga, Michio; and Yoshida, Makoto, to Citizens Watch Co., Ltd. Device for correcting time displayed on electronic timepiece. 3,733,803, Cl. 58-23.00r.

Hirai, Kentaro: *See—*
Takamizawa, Akira; and Hirai, Kentaro, 3,734,913.

Hirano, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Integrated circuit frequency dividers in electronic musical instrument. 3,735,012, Cl. 84-1.010.

Hirata, Shinichi, to Kabushiki Kaisha Ricoh. Recording medium feed system for reader of data processing equipment. 3,735,098, Cl. 235-61.11r.

Hiroshima, Minoru: *See—*
Nakamura, Hideo; Takasugi, Kazuo; Hiroshima, Minoru; and Inose, Fumiyuki, 3,735,365.

Hirs, Gilles Gerardus, to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid. Aerodynamic or hydrodynamic element, such as a wing or a blade. 3,734,641, Cl. 416-4.000.

Hirsch, Clifford Burton. Animal trap. 3,733,735, Cl. 43-61.000.

Hirschfeld, Tomas, to Black Engineering, Inc. Apparatus for forming microelements. 3,734,769, Cl. 117-212.000.

Hitachi, Ltd.: *See—*
Moriya, Hisanori; and Hosho, Yukio, 3,734,473.
Nakamura, Hideo; Takasugi, Kazuo; Hiroshima, Minoru; and Inose, Fumiyuki, 3,735,365.
Wada, Takeshi; Kita, Hisanao; and Kitamura, Michi, 3,735,086.

Hiyata, Hiromasa: *See—*
Kobayashi, Torao; and Hiyata, Hiromasa, 3,734,070.

Hlafcsak, Joseph L., to Mesta Machine Company. Mill roll changing arrangement. 3,733,876, Cl. 72-239.000.

Ho, Irving T., to International Business Machines Corporation. Specialized array logic. 3,735,358, Cl. 340-173.00r.

Hoad Engineers Incorporated: *See—*
Abos, Ramon L., 3,734,036.

Hoare, John J., to Kirsch Company. Fixture for traverse rod. 3,734,440, Cl. 248-265.000.

Hobart Manufacturing Company, The: *See—*
Engerbretsen, Einar O., 3,734,009.

Hochman, Jack M.: *See—*
Goldstein, Arnold M.; Effron, Edward; and Hochman, Jack M., 3,734,469.

Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, to Institutul de Chimie Cluj. Novel process for 3 beta, 17-beta-dihydroxy-5-androstene-17 alpha-propynoic acid. 3,734,938, Cl. 260-397.100.

Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
Kuhnelt, Herbert F., 3,734,132.

Hoesch Aktiengesellschaft: *See—*
Lohr, Manfred, 3,734,478.

Hoffman, Edward P., to Eastman Kodak Company. Process of extruding melted polymeric thermoplastic materials. 3,734,984, Cl. 264-40.000.

Hoffman-La Roche Inc.: *See—*
Krubiner, Alan Martin, 3,734,952.

Hoffmann, Werner; Pasedach, Heinrich; and Pommer, Horst, to Badische Anilin-& Soda-Fabrik Aktiengesellschaf. 1-(4-Oxopent-1-enyl)-1,3-dimethylcyclohex-2-ene 1-(4-oxopent-1-enyl)-1,3-dimethylcyclohex-3-ene and their methyl homologs. 3,734,967, Cl. 260-586.0r.

Hokes, James J.: *See—*
Morine, Richard L.; and Hokes, James J., 3,734,356.

Holland, Richard J.: *See—*
Sztankay, Zoltan G.; Holland, Richard J.; and Swirczynski, John P., 3,734,592.

Hollaway, John Thomas, to International Business Machines Corporation. Programmable code selection for automatic address answerback in a terminal system. 3,735,106, Cl. 235-154.000.

Hollingsworth, Elvin R., to Overmyer Corporation. Method for forming a blown bottle having a chime in the shoulder portion thereof. 3,734,703, Cl. 65-68.000.

Holm, James P., to Upjohn Company, The. Arming control for servo-adjusted tablet compressing machines. 3,734,663, Cl. 425-147.000.

Holmberg, Bo F.; and Hellstrom, Nils Erik. Signal controlled trimming device. 3,734,150, Cl. 83-474.000.

Holmberg, Roland Bengt; and Petersson, Ralf Krister Ebbe, to Kalmar Verkstadsaktiebolag. Mechanisms for coupling semi-trailers to tractors. 3,734,537, Cl. 280-421.000.

Holmgren, Per Harald, to Saab-Scania Aktiebolag. Maintaining desired speed of cutting tool in numerically controlled machine tool. 3,735,104, Cl. 235-151.110.

Holt, Brian, to Ciba-Geigy Corporation. Stabilizing organic material with piperidone azines. 3,734,883, Cl. 260-45.80n.

Holt, F. Sheppard: *See—*
Sletten, Carlyle J.; and Holt, F. Sheppard, 3,735,400.
Sletten, Caryle J.; and Holt, F. Sheppard, 3,735,399.

Holt, Lloyd J.; Myers, Harry L.; and Zurn, Gordon F., Jr., to United States of America, Navy. Target aircraft flight termination system. 3,734,429, Cl. 244-1.00r.

Holub, George J., to United States of America, Navy. Delayed pulse generator. 3,735,270, Cl. 328-55.000.

Holzer Patent AG: *See—*
Holzer, Walter K., 3,733,916.

Holzer, Walter K., to Holzer Patent AG. Device to slow down a mechanical step drive. 3,733,916, Cl. 74-125.000.

Holzhauser, Emil A., to Honeywell Inc. Temperature regulating heat-recording stylus. 3,735,417, Cl. 346-139.00c.

Holzman, Allen L., to United Aircraft Corporation. Cutting torch. 3,734,476, Cl. 266-23.00r.

Holzman, Lawrence B.: *See—*
Vona, Joseph A.; Holzman, Lawrence B.; and Tracy, James E., 3,734,879.

Honeywell Inc.: *See—*

Aagard, Roger L., 3,734,625.
Holzhauser, Emil A., 3,735,417.
Rork, Gerald D.; Schlachter, Alfred S.; Simon, Frank N.; and Stryk, Robert A., 3,735,138.

Hoogendoorn, Helen M.; and McIntosh, Charles M., to International Business Machines Corporation. Magnetic head assembly using titanium dioxide and barium titanate slider. 3,735,052, Cl. 179-100.20c.

Hook, Bernard K.: *See—*
Heniser, Eugene W.; and Hook, Bernard K., 3,734,042.

Hooker Chemical Corporation: *See—*
Bowen, Jonathan L.; and Dexter, Theodore H., 3,734,860.
Carlson, Ronald H., 3,734,861.
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., 3,734,976.

Hoover Company, The: *See—*
Zepp, Philip H., 3,734,314.

Hoover, Merwin Frederick; and Sinkovitz, Gloria Dimarco, to Calgon Corporation. Cationic dextran graft copolymers as dry strength additives for paper. 3,734,820, Cl. 162-168.000.

Hope, Henry F.; and Hope, Stephen F. Interchangeable drive with balancing gears. 3,733,926, Cl. 74-410.000.

Hope Kabushiki Kaisha: *See—*
Hashioka, Noliyasu, 3,734,520.

Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 3,733,926.

Hopkins, Arthur W. Opening means for tetrahedral container. 3,734,388, Cl. 229-7.000.

Hopp, Manfred: *See—*
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.

Horvath, Tibor, to Halvin Products Co., Inc. Suction cleaner for aquariums. 3,734,853, Cl. 210-169.000.

Hosho, Yukio: *See—*
Moriya, Hisanori; and Hosho, Yukio, 3,734,473.

Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, to Zvl Vyzkumny ustav pro Valiva loziska. Spindle adapted for textile machinery. 3,734,583, Cl. 308-189.00r.

Houdaille Industries, Inc., mesne: *See—*
Hall, Jeffrey, 3,734,484.

House, Eugene R., to Device for molding patties and the like. 3,733,652, Cl. 17-32.000.

Houtler, Gerald. Adjustable ladder platform. 3,734,236, Cl. 182-121.000.

Howard, Charles I., to Howard Manufacturing Company. Ladder. 3,734,237, Cl. 182-216.000.

Howard, Donald W.: *See—*
Hickner, George B.; Slavin, Michael; and Howard, Donald W., 3,734,572.

Howard, Frances B. Foldable toothbrush with paste supply and dispenser and covering means. 3,734,118, Cl. 137-84.000.

Howard Manufacturing Company: *See—*
Howard, Charles I., 3,734,237.

Howe, Spencer D., to Hughes Aircraft Company. Scanning system with uniform scan rate and rapid return. 3,734,591, Cl. 350-6.000.

Howes, Peter A.; and Cooper, Eugene A., to Bell & Howell Company. Tape tension control in tape recorders. 3,734,426, Cl. 242-190.000.

Howes, Roynon: *See—*
Griffiths, Victor Sidney; and Howes, Roynon, 3,734,629.

Howse, Geoffrey David Stuart: *See—*
Gooding, Trevor Frank John; and Howse, Geoffrey David Stuart, 3,735,326.

Hoyer, Paul Jean; and Rushmere, John Derek, to Du Pont de Nemours, E. I., and Company. Alkaline cyanide zinc electroplating. 3,734,839, Cl. 204-55.00y.

HTL Industries Inc., mesne: *See—*
Kermer, Jack M.; and Sitabkhan, Abdul N., 3,735,376.

Hubbard, Harold C., to Motor Wheel Corporation. Electric brake. 3,734,245, Cl. 188-163.000.

Hug, Leonard F.; Grossman, Phillip A.; Young, Roland L.; and Stark, Robert E., to Gates Rubber Company, The. Method for producing a spirally wound electrolytic cell. 3,734,778, Cl. 136-13.000.

Huggins, Orville C., to National Cash Register Company, The. Selective roller inker means for high speed selective type drum. 3,734,012, Cl. 101-93.00c.

Hughes Aircraft Company: *See—*
Blair, George R.; and Ricaud, Francois J., 3,734,837.
Howe, Spencer D., 3,734,591.
Pedinoff, Melvin E., 3,735,279.

Hughes, Robert T.; and Adams, Houston L., to Latch Plastics, Inc. Closure-fastener for cabinets or the like. 3,734,551, Cl. 292-17.000.

Hughey and Phillips, Inc.: *See—*
Knudson, Clarence B., 3,735,339.

Huibers, Th. A. Derk: *See—*
McNabney, Ralph; and Huibers, Th. A. Derk, 3,734,846.

Hull, Thomas Neil, Jr.; and Klug, Anton, to General Electric Company. Translatable engine inlet particle separator. 3,733,814, Cl. 60-39.9dp.

Hulme, Michael Anthony, to Canadian Patents and Development Limited. Production of cellulase. 3,734,831, Cl. 195-66.00r.

Humbert, Jack. Handle structure. 3,734,049, Cl. 115-6.100.

Humes, Carl E. Steering assembly for trailers. 3,734,538, Cl. 280-426.000.

Humphreys, Martin G., to Redifon Limited. Electronic switching circuit arrangements. 3,735,194, Cl. 315-30.000.

Hungate, Ernest C.; Ogletree, Harold A.; and Nickell, Grason T., to Air Conditioning Corporation. Pollution control method and apparatus. 3,733,778, Cl. 55-89.000.

Hunger, Klaus, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Bis-methylene-amides of phosphoric or phosphonic acids and their thio-derivatives. 3,734,981, Cl. 260-959.000.

Hunt, John W. E. Electrified plastic Christmas tree. 3,735,117, Cl. 240-10.00t.

Huntington, Richard L. Flue gas recovery method and apparatus. 3,733,777, Cl. 55-48.000.

Hurst, George W.; and Colwell, William C., Jr., to University of Kentucky Research Foundation, The, mesne. Sensor package for electrical sensing of plane coordinates and method of preparing the same. 3,735,023, Cl. 174-117.0ff.

Hurth, Carl, Maschinen-und Zahnradfabrik: *See—*
Loos, Herbert, 3,733,886.

Hurtle, Ralph L., to General Electric Company. Vapor-state limiter with high pressure housing. 3,735,309, Cl. 337-21.000.

Husbands, George E. M.; and Stein, Reinhardt P., to American Home Products Corporation. Biologically active 17 alpha-ethynyl-16, 17-dihydroxy-13-alkygonanes. 3,734,935, Cl. 260-397.400.

Husen, Gerhard J., to Hygrade Food Products Corporation. Conveyor press. 3,734,007, Cl. 100-152.000.

Hydril Company: *See—*
Macheel, Gary W., 3,735,351.

Hydro Chemical & Mineral Corporation: *See—*
Osdor, Asriel, 3,734,160.

Hydronautics-Israel Ltd.: *See—*
Linenberg, Amos, 3,733,908.

Hygrade Food Products Corporation: *See—*
Husen, Gerhard J., 3,734,007.

Hylmo, Bertil: *See—*
Bengtsson, Bengt Lennart; Bosund, Sven Ingmar Walton; and Hylmo, Bertil, 3,734,751.

Hysaw, Jimmie H. Quick-change slip-float. 3,733,734, Cl. 43-44.900.

Hyster Company: *See—*
Lynch, Peter D.; Oldfield, Dempsey R.; and Zifka, Donald K., 3,734,324.

I-T-E Imperial Corporation: *See—*
Brandt, Thomas F., Jr.; and Netzel, Philip C., 3,735,065.
Clement, Ralph C., 3,735,064.
Conrad, Richard R., 3,735,215.
May, William E., 3,735,201.

Ide, mitsuo: *See—*
Takakuwa, Shigeru; Iwami, Kenichi; and Ide, mitsuo, 3,733,723.

Ideal Toy Corporation: *See—*
Cooper, Julius, 3,734,500.

I.D.L. Co., Inc.: *See—*
Reiter, Eli; and Hickey, Herbert P., 3,733,809.

Ido, Yoshimitsu: *See—*
Arimura, Tohru; Okado, Masaru; Fukuma, Yuji; and Ido, Yoshimitsu, 3,733,866.

Ieda, Motoi; Mizushina, Yoichi; and Shimazaki, Masaru, to Kokusai Denki Kabushiki Kaisha. Electric furnace. 3,735,008, Cl. 13-25.000.

Iijima, Masakatsu, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument key-operated switch assembly having vibration-absorber attached to movable contact member. 3,735,076, Cl. 200-166.00d.

Iioa, Shuichi. Magnetic memory employing force detecting element. 3,735,369, Cl. 340-174.00r.

Ikeuchi, Hiroshi, to Denki Onkyo Co., Ltd. Deflection yoke. 3,735,193, Cl. 315-27.0xy.

Ikoga, Wataru: *See—*
Yasui, Yukio; Ikoga, Wataru; Mori, Akihiko; and Adachi, Tadaaki, 3,734,746.

Ilines, Laurence J.: *See—*
Danner, William E.; and Ilines, Laurence J., 3,734,330.

Illinois Tool Works Inc.: *See—*
Jaeger, Joseph H., 3,735,121.
Kerrigan, James E.; and Klygis, Mindaugas J., 3,734,278.

Imperial Chemical Industries Limited: *See—*
Craig, William Allan, 3,734,864.
Dodman, David; Laithwaite, Peter; Leyland, Boris Nicholas; and Quan, Peter Michael, 3,734,886.

Ina, Kazuo: *See—*
Sakato, Yajiro; Ina, Kazuo; Yamamoto, Yukitsune; and Morishita, Harumi, 3,734,932.

Industrial Electronic Hardware Corporation: *See—*
Offerman, Seymour; and Pittman, Robert B., 3,735,330.

Ingenuics, Inc.: *See—*
Craig, Dwin R., 3,735,415.

Ingerstedt, Sven; and Paabo, Max, to Hasselfors Bruks Aktiebolag. Germination and seedling promoting unit. 3,733,745, Cl. 47-37.000.

Inland Container Corporation: *See—*
Brown, Philip H., 3,734,389.

Inose, Fumiyuki: *See—*
Nakamura, Hideo; Takasugi, Kazuo; Hiroshima, Minoru; and Inose, Fumiyuki, 3,735,365.

Institut Electrosvarki Imeni Patona: *See—*
Latash, Jury Vadimovich; Medovor, Boris Izrailevich; Leibenzon, Semen Abramovich; and Kaganovsky, Gary Petrovich, 3,734,164.

Institut Elektrosvarki imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See—*

Pokhodnya, Igor Konstantinovich; and Golovko, Vladimir Nikolaevich, 3,735,090.
Institut za Elektroniko In Vakuumsko Tehniko: *See*—
Kansky, Evgen, 3,735,213.
Institutul de Chimie Cluj: *See*—
Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.
Integrated Development and Manufacturing Co.: *See*—
Davis, Noel, 3,734,810.
Inter-Probe, Inc.: *See*—
Blomgren, Oscar C., Jr., 3,735,175.
International Business Machines Corporation: *See*—
Anderson, David W.; Gustafson, Richard N; Johnson, Lance H.; and Sparacio, Francis J., 3,735,360.
Ashany, Pon; Audreisch, Leo M., Jr.; and Pisterzi, Michael J., 3,735,362.
Beausoleil, William F., 3,735,368.
Belser, Karl Arnold, 3,734,013.
Bickford, Harry G.; Kieny, Leonard A., Jr.; and Peltier, Lewis G., Jr., 3,733,893.
Cade, Paul E., 3,734,620.
Dalton, John J.; and Skolnik, Marvin B., 3,735,182.
Dhaka, Vir A.; and Krolikowski, Walter F., 3,734,787.
Drangeid, Karsten E.; and Moser, Andreas, 3,735,390.
Harr, Jerome Danforth; and McMurtry, David Harwood, 3,735,142.
Hazel, Herbert K., 3,734,386.
Ho, Irving T., 3,735,358.
Hollaway, John Thomas, 3,735,106.
Hoogendoorn, Helen M.; and McIntosh, Charles M., 3,735,052.
Kendall, Frank T.; Pierce, Donald L.; and Weikel, Walter J., 3,735,093.
Lasky, Daniel J., 3,733,993.
Maholick, Andrew Walter; Newlin, Frank Allen, III; Snyder, Ramon Eugene; and Stager, Stanley Ray, III, 3,735,357.
Maley, Gerald A., 3,735,105.
Menard, Edward A.; and Webster, David O., 3,734,869.
Poliak, Richard M., 3,734,791.
International Playtex Corporation: *See*—
Locascio, Jack J., 3,734,101.
International Standard Electric Corporation: *See*—
Poppe, Dag; and Mathiesen, Odd, 3,735,410.
International Systems Management: *See*—
Aintablian, Avedis A., 3,734,988.
International Telephone and Telegraph Corporation: *See*—
Clark, James M., 3,735,045.
Etcheverry, John P.; and Doolittle, James B., 3,734,128.
Sapira, Said, 3,735,148.
Weintraub, Arthur; Cook, Wendell A.; Gatwood, Robert K.; and De Brosse, Kenneth L., 3,735,344.
Intersil Incorporated, mesne: *See*—
Rizzi, Joseph D.; and Fagan, Lloyd D., 3,733,690.
Interstate Sports Incorporated: *See*—
Tripp, Virgil P., 3,733,922.
Inventa A.G. fur Forschung und Patentverwertung: *See*—
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Platt, John G.; and Isaacs, Robert O., 3,733,625.
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Naka, Katsushi, 3,735,388.
Naka, Katushi, 3,735,383.
Ishibawajima-Harima Heavy Industries Co., Ltd.: *See*—
Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, 3,735,401.
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Hatta, Hiroshi; and Ishii, Yoshiteru, 3,735,364.
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Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich, 3,734,428.
Isley, Sigmund G.: *See*—
Brummet, Paul L.; and Isley, Sigmund G., 3,734,027.
Itek Corporation: *See*—
Armstrong, Clarence J.; and Cronig, Alvin, 3,733,994.
Ito, Hideo: *See*—
Kawada, Seigo; Ito, Hideo; Matsui, Kazuo; and Kasugai, Hiroshi, 3,734,927.
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Takakuwa, Shigeru; Iwami, Kenichi; and Ide, mitsuo, 3,733,723.
Iwatsu Electric Company, Limited: *See*—
Iwabuchi, Kasuo; and Yoshioka, Tomonori, 3,735,395.
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Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., 3,734,983.
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Jackson, Lloyd J.: *See*—
Rentz, Albert W.; Jackson, Lloyd J.; Willard, Robert C.; and Burklund, Vernon D., 3,734,019.
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Reisacher, Josef; Klaue, Hans Joachim; Jacoby, Ewald; and Bergmeier, Dieter, 3,734,650.
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Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, 3,734,951.
Jahresuhren-Fabrik GmbH: *See*—
Wisser, Otto, 3,733,802.
Jakel, Joseph B. Fastening strip for synthetic turf. 3,733,647, Cl. 16-16.000.
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Janka, Franz: *See*—
Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, 3,734,951.
Jannuzzi, Frank, Jr. Winterizing cover for above-the-ground swimming pool skimmer opening. 3,733,621, Cl. 4-172.190.
Japan Synthetic Rubbers Co., Ltd.: *See*—
Komatsu, Koei; Hayashi, Shigeki; Ohishi, Akira; and Sakai, Mashato, 3,734,898.
Jarvis, Francis L.: *See*—
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,733,960.
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Asmus, Richard W.; and Jecker, Andrew E., 3,734,044.
Jenkins, Elmer Thomas; and Ward, Geoffrey Marcus. Spark-discharge apparatus for electrohydraulic crushing. 3,735,195, Cl. 315-111.000.
Jensen, Charles E.: *See*—
Renskers, John O.; and Jensen, Charles E., 3,735,214.
Jeske, Bernard G. Buffing wheel and cartridge. 3,733,754, Cl. 51-375.000.
Jet Research Center, Inc.: *See*—
Gillingham, Ernest Lee, 3,734,018.
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Jiruse, Jaroslav, to Adamovske Strojirny, narodni podnik. Device for preselection of the number of printed paper sheets. 3,734,016, Cl. 101-232.000.
Johns-Manville Corporation: *See*—
Loeffler, Romain Eugene; and Plotts, Vernon Charles, 3,733,677.
Johnson & Johnson: *See*—
Petterson, Dewitt R.; Assenza, John S.; and Kipp, Henry A. W., 3,734,080.
Johnson, Lance H.: *See*—
Anderson, David W.; Gustafson, Richard N; Johnson, Lance H.; and Sparacio, Francis J., 3,735,360.
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Goodrich, Eugene A.; and Johnson, Robert H., 3,733,923.
Johnson, Robert P. Welding filler material feed apparatus. 3,734,369, Cl. 226-134.000.
Johnson, Roger A., to Wheelabrator Corporation, The. Liner assembly for blast cabinets and elements therefor. 3,733,752, Cl. 51-8.000.
Johnson Service Company: *See*—
Atkinson, Louis D., 3,734,117.
Donovan, John C.; Krishnaiyer, Ramesh; and Esser, Frank J., 3,735,353.
Johnson, Terry Gordon: *See*—
Kahn, Michael Edwin; Krajewski, William Frank; and Johnson, Terry Gordon, 3,735,219.
Johnson, Wilfred V.; and Shea, Raymond E., to U.S. Fire Control Corporation. Fire extinguishing system. 3,734,191, Cl. 169-5.000.
Johnston, Richard W.: *See*—
Agarwal, Paul D.; Johnston, Richard W.; and Neuman, John G., 3,735,207.
Johnston, Wilbur Dexter, Jr., to Bell Telephone Laboratories, Incorporated. White-light laser using dye coupling. 3,735,280, Cl. 331-94.500.

Joly-Pottuz, Jean-Claude: *See*—
Joly-Pottuz, Lucien; and Joly-Pottuz, Jean-Claude, 3,734,661.

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Sinnott, Norbert C.; and Jones, Harold A., Jr., 3,735,305.

Jones, Kenneth W.; and Richie, Edward H. Non-lethal projectile and launcher therefor. 3,733,727, Cl. 42-1.00r.

Jones, R. A., & Company, Inc.: *See*—
Hamilton, Joel A., 3,733,773.

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Young, Fred M.; and Jones, Ronald E., 3,733,673.

Jones, Stanley C., to Marathon Oil Company. Use of water-external micellar dispersion in oil recovery. 3,734,185, Cl. 166-273.000.

Jones, William V.: *See*—
Gauthier, Donald E.; and Jones, William V., 3,734,313.

Jordan, John William: *See*—
Butler, John Francis; Jordan, John William; and Orbeck, Finn, 3,734,074.

Jorpes, Johan E.: *See*—
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,734,946.

Jude, Ioan: *See*—
Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.

Jufi Photo Film Co., Inc.: *See*—
Yagi, Motohiko, 3,735,328.

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Flider, Frank S., 3,735,120.

K-G Industries, Inc.: *See*—
Harris, Leroy S., 3,734,659.

K-Tel International, Inc.: *See*—
Kieves, Garry, 3,734,548.

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Griesinoer, Wolfram, 3,735,018.

Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Brettenbach, Otto, 3,735,293.
Mann, Helmut, 3,733,691.
Martin, Helmut; and Krisch, Lothar, 3,735,056.

Kabel- und Metallwerke Guthoffnungshutte Aktiengesellschaft: *See*—
Larsen, Herbert; and Martin, Helmut, 3,733,693.

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Kitai, Toshio; and Kitai, Mitsuo, 3,734,050.

Kabushiki Kaisha Daini Seikosha: *See*—
Kashimura, Toshibumi; and Kato, Noriaki, 3,733,805.
Maeda, Katsutoshi; and Kobayashi, Norio, 3,733,800.
Nozawa, Hideo, 3,733,807.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Misawa, Hiroshi, 3,734,556.

Kabushiki Kaisha Koparu: *See*—
Matsuda, Yasuhisa, 3,733,911.

Kabushiki Kaisha Ricoh: *See*—
Fujimoto, Sakae, 3,733,951.
Hirata, Shinichi, 3,735,098.

Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See*—
Ueno, Ryuzo; and Kashihara, Motomu, 3,734,947.

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Kawai, Yoshihiro, 3,735,060.

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Kaganovsky, Gary Petrovich: *See*—
Latash, Jury Vadimovich; Medovor, Boris Izrailevich; Leibenzon, Semen Abramovich; and Kaganovsky, Gary Petrovich, 3,734,164.

Kahn, Michael Edwin; Krajewski, William Frank; and Johnson, Terry Gordon, to Memorex Corporation. Thermal protection device. 3,735,219, Cl. 318-135.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Elgert, Albert H.; and Harmes, Lee D., 3,733,869.
Kautz, Leon F., 3,734,438.

Kaiser, Fritz W., to Alpine Aktiengesellschaft. Fluidized bed jet mill. 3,734,413, Cl. 241-39.000.

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Holmberg, Roland Bengt; and Petersson, Ralf Krister Ebbe, 3,734,537.

Kaman Sciences Corporation, mesne: *See*—
Church, Peter K.; and Knutson, Oliver J., 3,734,767.

Kamimura, Haruo: *See*—
Nagai, Hiroshi; Shirohama, Masatoshi; Matsumoto, Kenichi; and Kamimura, Haruo, 3,733,871.

Kamm, Vernon C.: *See*—
Centner, Ronald M.; and Kamm, Vernon C., 3,735,044.

Kampmeyer, Roy, to Ambler Electronics. Remote control systems. 3,735,412, Cl. 343-225.000.

Kanayawa Kiki Kogyo Co., Ltd.: *See*—
Akiyama, Jiro, 3,734,299.

Kanda, Nobuo: *See*—
Asano, Kazuo; Furukawa, Minoru; and Kanda, Nobuo, 3,735,006.

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Wakimoto, Saburo; Tugukuni, Hideyoshi; and Kano, Masafumi, 3,734,872.

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Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich, 3,734,428.

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Kardas, Michael J., Jr.: *See*—
Killmeyer, William S., 3,733,862.

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Kashihara, Motomu: *See*—
Ueno, Ryuzo; and Kashihara, Motomu, 3,734,947.

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Kasper, Robert J., to Park-Ohio Industries, Inc. Induction heating coil support. 3,735,082, Cl. 219-10.790.

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Epstein, Harry, 3,733,627.

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Kawada, Seigo; Ito, Hideo; Matsui, Kazuo; and Kasugai, Hiroshi, 3,734,927.

Kataoka, Hiroshi. Method and apparatus for continuously producing small dispensing rolls of sheet. 3,734,423, Cl. 242-56.00a.

Kato, Jyoji: *See*—
Chibata, Ichiro; Kisumi, Masahiko; Kato, Jyoji; and Sugiura, Masaki, 3,734,829.

Kato, Noriaki: *See*—
Kashimura, Toshibumi; and Kato, Noriaki, 3,733,805.

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Ciccarelli, William E.; and Kaufman, Phillip A., 3,734,524.
Kauppila, James E., to General Motors Corporation. Method of making a passivated wire bonded semiconductor device. 3,733,685, Cl. 29-470.100.
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Kavirov, Rinad Fatkhrakhmanovich: *See—*
Nazyrov, Ravil Nigametzhanovich; and Kavirov, Rinad Fatkhrakhmanovich, 3,734,146.
Kawa, Dawn E.: *See—*
Osadsky, Paul, 3,733,636.
Kawabe, Katsumi: *See—*
Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, 3,735,401.
Kawada, Seigo; Ito, Hideo; Matsui, Kazuo; and Kasugai, Hiroshi, to Kumiai Chemical Industry Co., Ltd., mesne. Novel maleimide and agricultural fungicide. 3,734,927, Cl. 260-326.5fm.
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Kawaguchi Shoichi: *See—*
Yamamoto, Osamu, 3,733,698.
Kawai, Yoshihiro, to Kabushiki-Kaisha Tokai Rika Denki Seisakusho. Linearly movable actuator for slide-pivot contact assembly in switch devices. 3,735,060, Cl. 200-16.00r.
Kearney, Thomas J.; and Bieber, George F., to Detrex Chemical Industries, Inc. Method for drying metal parts. 3,733,710, Cl. 34-9.000.
Keenan, James P.: *See—*
Bonazoli, Robert P.; and Keenan, James P., 3,735,185.
Keith, Frederick Walker, Jr.; and Krause, Robert Edward, to Pennwalt Corporation. Basket centrifuge with material removing means. 3,734,398, Cl. 233-3.000.
Keller & Knappich GmbH: *See—*
Kraus, Johann, 3,734,318.
Kelley, George P. Nut harvester. 3,733,797, Cl. 56-328.00r.
Kelley, James O.: *See—*
Propst, Robert L.; and Kelley, James O., 3,734,526.
Kelley Manufacturing Company: *See—*
Whitfield, Carroll J., 3,734,194.
Kellogg-America, Inc.: *See—*
Bloxham, Alden T.; and Fischer, Harry C., 3,734,174.
Kelly, Earl L.: *See—*
Walter, Robert L.; and Kelly, Earl L., 3,734,073.
Kelly, Peter Bernard; and Oliver, Jay Thomas, to Formica Corporation. Polyvinyl fluoride surfaced laminates. 3,734,807, Cl. 161-5.000.
Kelsey-Hayes Company: *See—*
Stelzer, William, 3,734,570.
Kelver, William L.: *See—*
Rozema, Arthur L.; Budd, Wilbert H.; and Kelver, William L., 3,735,327.
Kemmerer, Wayne: *See—*
Porter, David H.; Kemmerer, Wayne; and Bray, Douglas, 3,735,123.
Kemper, Johannes A. Method of manufacturing an expansion element. 3,733,683, Cl. 29-471.100.
Kendall, Frank T.; Pierce, Donald L.; and Weikel, Walter J., to International Business Machines Corporation. Step motor and controls for non-oscillating punch/read positioning of 80-column record cards. 3,735,093, Cl. 235-61.100.
Kendall, Jim W.: *See—*
Culpepper, George O., Jr.; and Wyss, Clement R., 3,734,774.
Kennametal, Inc.: *See—*
McKelvey, Richard E., 3,733,664.
Kennametal Inc., mesne: *See—*
Goodfellow, Robert D., 3,734,213.
Kennecott Copper Corporation: *See—*
Redman, Michael J., 3,734,715.
Kennicott, Thomas C.: *See—*
Bryson, Robert A.; Kennicott, Thomas C.; and Sarring, Ernest J., 3,733,947.
Kenting Drilling, Ltd.: *See—*
Wilderman, Giles H., 3,734,210.
Keogh, James R., Jr., to FMC Corporation. Cleaning oil laden metal waste to recover the metal and reclaim the oil. 3,734,776, Cl. 134-25.00r.
Kermer, Jack M.; and Sitabkhan, Abdul N., to HTL Industries Inc., mesne. Leakage indicator for a fire extinguisher. 3,735,376, Cl. 340-242.000.
Kern, Eckhart: *See—*
Wolber, Robert; King, Josef; and Kern, Eckhart, 3,733,808.
Kerotest Manufacturing Corporation: *See—*
Tricini, John D.; and Schmitt, Edward L., 3,734,458.
Kerr-McGee Corporation: *See—*
Lucid, Michael F.; and Leader, William M., 3,734,696.
Kerrigan, James E.; and Klygis, Mindaugas J., to Illinois Tool Works, Inc. Container package. 3,734,278, Cl. 206-65.00s.
Kewpie Jyozo Kabushiki Kaisha: *See—*
Yasui, Yukio; Ikoga, Wataru; Mori, Akihiko; and Adachi, Tadaaki, 3,734,746.
Khajezadeh, Heshmat: *See—*
Kalish, Israel Haim; and Khajezadeh, Heshmat, 3,735,210.
Kheifets, Rafail Efimovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich, 3,733,774.
Kibler, Charles J.; and Lappin, Gerald R., to Eastman Kodak Company. Polyesters and polyesteramides containing ether groups and sulfonate groups in the form of a metallic salt. 3,734,874, Cl. 260-29.20e.
Kidaka, Toshiaki: *See—*
Kato, Tetsuya; Kidaka, Toshiaki; and Okagawa, Chikatsu, 3,734,986.
Kidd, Alan Lister, to Smith, Dorman, Switchgear Limited. Electric circuit breaker having an arcing contact with larger pivot notch than parallel movable contacts. 3,735,075, Cl. 200-146.00r.
Kidde, Walter, & Company, Inc.: *See—*
Greenwald, Harry; and Kidde, Walter, & Company, Inc., 3,733,864.
Greenwald, Harry; and Tuppo, Robert, 3,735,066.
Kienast, Gerhard: *See—*
Bade, Heribert; Bellefontaine, August; and Kienast, Gerhard, 3,734,996.
Kieny, Leonard A., Jr.: *See—*
Bickford, Harry G.; Kieny, Leonard A., Jr.; and Peltier, Lewis G., Jr., 3,733,893.
Kienzle Apparate G.m.b.H.: *See—*
Mutz, Gerhard; Hettich, Bernhard; and Moser, Werner, 3,735,095.
Kieves, Garry, to K-Tel International, Inc. Shaft connection mechanism. 3,734,548, Cl. 287-53.00r.
Kilgore, Lee A.; Strait, Bernard S., Jr.; and Whitney, Eugene C., to Westinghouse Electric Corporation. Twin motor drive system. 3,735,217, Cl. 318-100.000.
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Kilmer, Bill G.: *See—*
Linn, Wallace L.; Kilmer, Bill G.; and Weber, Richard H., 3,735,164.
Kimball Products Company, Inc.: *See—*
Mosher, Richard K., 3,735,402.
King, Josef: *See—*
Wolber, Robert; King, Josef; and Kern, Eckhart, 3,733,808.
King, Stanley T., to Dow Chemical Company, The. Infrared spectroscopy apparatus. 3,734,056, Cl. 118-48.000.
Kinney, Thomas D.; and Pickett, John E. P. Apparatus for slitting an electron microscopy tissue embedding capsule casing. 3,733,950, Cl. 83-425.300.
Kinoshita, Mikio: *See—*
Murayama, Yoshinobu; Morimoto, Tadashi; Kinoshita, Mikio; and Yamanishi, Isamu, 3,733,912.
Kioritz Corporation: *See—*
Kobayashi, Torao; and Hiyata, Hiromasa, 3,734,070.
Kipling, Barry John, to Rye Limited. Medical respirator. 3,734,092, Cl. 128-145.500.
Kipp, Henry A. W.: *See—*
Petterson, Dewitt R.; Assenza, John S.; and Kipp, Henry A. W., 3,734,080.
Kirosawa, Kiochiro: *See—*
Uozumi, Sumio; and Kirosawa, Kiochiro, 3,733,928.
Kirsch Company: *See—*
Hoare, John J., 3,734,440.
Kirshenbaum, Abraham D.; and Taylor, Francis R., to United States of America, Army. Gaseous illuminant pyrotechnic systems. 3,734,790, Cl. 149-22.000.
Kissell, Gerry E.: *See—*
Finney, Robert R.; Luckenbill, Lawrence F.; and Kissell, Gerry E., 3,734,112.
Kisumi, Masahiko: *See—*
Chibata, Ichiro; Kisumi, Masahiko; Kato, Jyoji; and Sugiura, Masaki, 3,734,829.
Kita, Hisanao: *See—*
Wada, Takeshi; Kita, Hisanao; and Kitamura, Michi, 3,735,086.
Kitai, Mitsuo: *See—*
Kitai, Toshio; and Kitai, Mitsuo, 3,734,050.
Kitai, Toshio; and Kitai, Mitsuo, to Kabushiki Gaisha Kitai Tekkoshyo. Propulsion apparatus for a ship. 3,734,050, Cl. 115-35.000.
Kitamura, Michi: *See—*
Wada, Takeshi; Kita, Hisanao; and Kitamura, Michi, 3,735,086.
Kitch, Paul E., to Scott Paper Company. Film depletion detection system. 3,734,617, Cl. 355-111.000.
Kiziol, Walter, to Beatrice Foods Co. Hinge structure. 3,734,076, Cl. 126-25.00r.
Klaue, Hans Joachim: *See—*
Reisacher, Josef; Klaue, Hans Joachim; Jacoby, Ewald; and Bergmeier, Dieter, 3,734,650.
Klaue, Hermann. Annular, antipodal, relatively-separable brake. 3,734,242, Cl. 188-71.400.
Klaus, Siegfried, to Peddinghaus, Paul Ferd. Hold-down device for shears in particular for bar stock shears. 3,734,485, Cl. 269-137.000.
Klausmann, Milton H.: *See—*

Brucker, Henry J.; Brucker, Robert J.; and Klausmann, Milton H., 3,734,361.
Kleber, Peter: *See—*
Maier, Horst; Arbeitland, Erich; and Kleber, Peter, 3,733,758.
Klein, Gerhart P.: *See—*
Kallianides, Milton; and Klein, Gerhart P., 3,733,660.
Klein, Jean-Pierre, to Rivtac Blindnieten, A.G. Blind rivetting tool with automatic loading means. 3,733,882, Cl. 72-391.000.
Kleykamp, Donald L.: *See—*
Wickham, William T.; Brown, Frank; Kleykamp, Donald L.; and Kossuth, Otto, 3,733,697.
Kline, Leo; and Sugihara, Takashi F., to United States of America, Agriculture. Sour dough french bread. 3,734,743, Cl. 99-90.00s.
Klingaman, Richard M.: *See—*
Blasch, Earl B.; Klingaman, Richard M.; and Page, Daniel M., 3,734,723.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Haas, Helmut; and Siedler, Helmut, 3,734,412.
Mettig, Hermann; and Medenus, Berhard, 3,734,071.
Weigel, Horst; Wilbertz, Otto; Manshausen, Theo; and Kryczun, Alfred, 3,734,414.
Klopfer, Anton Martin; and Dittmer, Georg, to U.S. Philips Corporation. Field emission cathode. 3,735,186, Cl. 313-346.00r.
Klug, Anton: *See—*
Hull, Thomas Neil, Jr.; and Klug, Anton, 3,733,814.
Klygis, Mindaugas J.: *See—*
Kerrigan, James E.; and Klygis, Mindaugas J., 3,734,278.
Knapp, Walter; Weinert, Volker; and Ramsauer, Kurt, to Agfa-Gevaert Aktiengesellschaft. Photographic printing apparatus. 3,734,611, Cl. 355-41.000.
Knavish, Leonard A.: *See—*
Pecoraro, George A.; Mc Cornell, John F.; and Knavish, Leonard A., 3,734,701.
Knecht, Siegfried; and Demny, Helmut, to Maschinenfabrik Alfred Schmermund. Rotary cutter and strip feeding arrangement. 3,734,804, Cl. 156-518.000.
Knifton, John F., to Texaco Inc. Selective partial reduction of nitroparaffin substrates. 3,734,964, Cl. 260-566.00a.
Knockeart, Ronald P.; and Russo, Frank A., to Bendix Corporation, The. System for processing coded pulse data. 3,735,096, Cl. 235-61.11e.
Knopka, William N., to FMC Corporation. Transesterification catalysts for production of poly(C_4 to C_{18} alkyleneterephthalate). 3,734,891, Cl. 260-75.00r.
Knudson, Clarence B., to Hughey and Phillips, Inc. Safety system for visual approach. 3,735,339, Cl. 340-25.000.
Knutson, Gaylen M., to Union Oil Company. Ethylene-vinyl acetate emulsion adhesive. 3,734,819, Cl. 161-254.000.
Knutson, Oliver J.: *See—*
Church, Peter K.; and Knutson, Oliver J., 3,734,767.
Kobald, Walter; and Reichel, Eckehart, to Bosch, Robert, G.m.b.H. Hydrostatic drive for a motorcar. 3,734,225, Cl. 180-66.00r.
Kobayakawa, Masaki; and Yoshii, Takashi, to Nippon Electric Company Limited. Segment type display tube for selectively displaying one or more of a plurality of alpha-numerical characters. 3,735,181, Cl. 313-109.500.
Kobayashi, Norio: *See—*
Maeda, Katsutoshi; and Kobayashi, Norio, 3,733,800.
Kobayashi, Tamio: *See—*
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,735,047.
Kobayashi, Tatsuo; and Mino, Masayuki, to Minolta Camera Kabushiki Kaisha. Lens shutter. 3,733,991, Cl. 95-63.000.
Kobayashi, Torao; and Hiyata, Hiromasa, to Kioritz Corporation. Engine body construction of a chain saw. 3,734,070, Cl. 123-41.310.
Koch, Robert E.: *See—*
Rusk, Gerald R.; and Koch, Robert E., 3,734,448.
Kochanski, Aloysius J. Temperature responsive electrical switch assembly. 3,735,310, Cl. 337-107.000.
Koehring-Waterous, Ltd.: *See—*
Cryderman, George W., 3,734,419.
Koenig, Elmer A.: *See—*
Borutta, Robert A.; and Koenig, Elmer A., 3,734,147.
Koenig, Karl-Heinz: *See—*
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,734,712.
Koerner, Richard J., to United States of America, Atomic Energy Commission, mesne. Reactor vessel. 3,733,760, Cl. 52-224.000.
Koh-I-Noor Rapidograph, Inc., mesne: *See—*
Anderka, Gerold, 3,734,633.
Kohl, Karl. Holding device for the instrumentalities of an automatic warp knitting machine. 3,733,857, Cl. 66-86.00r.
Kojima, Noriatsu. Clamping device by segmental thread pipe for joint. 3,734,547, Cl. 285-357.000.
Koka, Volodimir Petrovich. Aerosol precipitator. 3,733,786, Cl. 55-222.000.
Kokusai Denki Kabushiki Kaisha: *See—*
Ieda, Motoi; Mizushina, Yoichi; and Shimazaki, Masaru, 3,735,008.
Koleske, Joseph Victor; and Walter, Earl Richard, to Union Carbide Corporation. Shaped and molded articles of polymer blends comprising polyolefins and lactone polymer. 3,734,979, Cl. 260-897.00r.
Kolibar, Richard W. Fastener device. 3,733,655, Cl. 24-73.00p.
Kolic, Edwin S.: *See—*
Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H., 3,734,784.
Kolin, Alexander, to University of California, The Regents of the. Electromagnetic catheter velometer-flow meter. 3,734,083, Cl. 128-2.05f.
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, to Ciba-Geigy AG. Dispersible α- and β-substituted anthroquinone dyestuffs containing an-alkyleneocoor group. 3,734,934, Cl. 260-376.000.
Kolodney, Morris; and Arbiter, William, to United States of America, Atomic Energy Commission. Corrosion surveillance system. 3,734,690, Cl. 23-230.00c.
Kolster, Christel E.: *See—*
Bolinger, John F.; and Kolster, Wilhelm K., 3,735,196.
Kolster, Wilhelm K.: *See—*
Bolinger, John F.; and Kolster, Wilhelm K., 3,735,196.
Komatsu, Koei; Hayashi, Shigeki; Ohishi, Akira; and Sakai, Mashato, to Japan Synthetic Rubbers Co., Ltd. Process for the preparation of random copolymers of conjugated dienes and vinyl aromatic hydrocarbons. 3,734,898, Cl. 260-84.300.
Kombol, Ralph J.: *See—*
Proctor, Robert H.; and Kombol, Ralph J., 3,734,296.
Koneczny, Henryk: *See—*
Pischinger, Ernest; Bursa, Stanislaw; Koneczny, Henryk; and Straszko, Jerzy, 3,734,709.
Kontis, George E.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,733,960.
Kontz, Robert F.: *See—*
Guest, Pal R.; and Kontz, Robert F., 3,734,666.
Korner, Horst, to Gervais AG. Foil package. 3,734,274, Cl. 206-46.00f.
Korte, Richard M.: *See—*
Frind, Gerhard; Korte, Richard M.; and Zlupko, John E., 3,735,074.
Koschinat, Baldur: *See—*
Werner, Hans; Koschinat, Baldur; and Vormbaum, Otto, 3,734,445.
Kossoff, Joseph; Liedtke, Ronald R.; and Young, Joe W., to Mattel, Inc. Doll having grasping hand and electrical means actuated thereby. 3,733,743, Cl. 46-228.000.
Kossuth, Otto: *See—*
Wickham, William T.; Brown, Frank; Kleykamp, Donald L.; and Kossuth, Otto, 3,733,697.
Kovacik, Joseph, to National Wire Industries, Inc. Stand for books and other articles. 3,734,032, Cl. 108-111.000.
Kowalski, Walter; Park, Franklin; and Schmidt, Jude P., to Motorola, Inc. Circuit for selectively limiting voltage magnitudes. 3,735,035, Cl. 178-7.100.
Kowarsch, Rainer: *See—*
Gumtau, Hans Dieter; and Kowarsch, Rainer, 3,735,244.
Koyama, Shinobu: *See—*
Akiyama, Yoshio; Sato, Tadanori; and Koyama, Shinobu, 3,734,069.
Koyo Lindberg Hevi-Duty Company: *See—*
Yamada, Harumi, 3,734,355.
Kozak, Donald S.; and Miller, David P., to Union Carbide Corporation. Process for producing a Ca-Ba-Al-Si-containing alloy. 3,734,714, Cl. 75-10.00r.
Kozak, Larry M.; and Southern, Raymond L., to Allegheny Ludlum Industries, Inc. Apparatus for roll pressure bonding. 3,734,384, Cl. 228-4.000.
Kozak, Larry M.; and Southern, Raymond L., to Allegheny Ludlum Industries, Inc. Apparatus for simultaneously bonding a plurality of widths of striping material to a substrate. 3,734,385, Cl. 228-4.000.
Krajewski, William Frank: *See—*
Kahn, Michael Edwin; Krajewski, William Frank; and Johnson, Terry Gordon, 3,735,219.
Krambeck, Robert Harold; and Sequin, Carlo Heinrich, to Bell Telephone Laboratories, Incorporated. Reversible two-phase charge coupled devices. 3,735,156, Cl. 307-304.000.
Kramer, Charles E.: *See—*
Hartline, Rolland L.; and Kramer, Charles E., 3,735,260.
Kramer, Frederick J. Liquid-gaseous interaction toy. 3,733,738, Cl. 46-91.000.
Krasnitz, Jacob; Krasnitz, Martin; Spatzek, Ronald M.; and Krasnitz, Ronald H. Blind stitch sewing machines. 3,734,039, Cl. 112-176.000.
Krasnitz, Martin: *See—*
Krasnitz, Jacob; Krasnitz, Martin; Spatzek, Ronald M.; and Krasnitz, Ronald H., 3,734,039.
Krasnitz, Ronald H.: *See—*
Krasnitz, Jacob; Krasnitz, Martin; Spatzek, Ronald M.; and Krasnitz, Ronald H., 3,734,039.
Kraus, Dixie Valentine. Bird feeding device. 3,734,061, Cl. 119-52.00r.
Kraus, Johann, to Keller & Knappich GmbH. Garbage collection vehicle. 3,734,318, Cl. 214-83.140.
Krause, Robert Edward: *See—*
Keith, Frederick Walker, Jr.; and Krause, Robert Edward, 3,734,398.
Krebs, Ernst T.: *See—*
McNaughton, Andrew; Krebs, Ernst T.; and Gurchot, Charles, 3,734,902.
Kreissig, Ernst Florian; and Feuerlein, Karl, to Sulzer Brothers Limited. Pneumatic railway car suspension. 3,734,030, Cl. 105-164.000.

Kreutzelman, Harm; and Verhoeven, Laurentius Maria, to U.S. Philips Corporation. Switch. 3,735,070, Cl. 200-78.000.
Krisch, Lothar: *See—*
Martin, Helmut; and Krisch, Lothar, 3,735,056.
Krishnaiyer, Ramesh: *See—*
Donovan, John C.; Krishnaiyer, Ramesh; and Esser, Frank J., 3,735,353.
Kritz, Jacob A., to Sperry Rand Corporation. Wheel slip sensor. 3,735,200, Cl. 317-5.000.
Kroeck, Herbert. Strip metal dimension sensing device for metal working machines. 3,734,260, Cl. 192-127.000.
Krohn, Ronald W.: *See—*
Bone, Arnold R.; and Krohn, Ronald W., 3,734,375.
Krolikowski, Walter F.: *See—*
Dhaka, Vir A.; and Krolikowski, Walter F., 3,734,787.
Kromer, Karl: *See—*
Noack, Eolf; Kromer, Karl; and Hillmann, Paul, 3,733,990.
Kroninklijke Nederlandsch Hoogovens En Staalfabriken: *See—*
Schorel, Hendrik Jan, 3,734,815.
Krubiner, Alan Martin, to Hoffman-La Roche Inc. Preparation of l-dopa. 3,734,952, Cl. 260-501.110.
Krugman, Saul; Giles, Joan P.; and Hammond, Jack, to United States of America, Army. Hepatites vaccine. 3,735,004, Cl. 424-89.000.
Kryczun, Alfred: *See—*
Weigel, Horst; Wilbertz, Otto; Manshausen, Theo; and Kryczun, Alfred, 3,734,414.
Kryszek, Albert A. Automatic restart circuit for knitting machines and the like. 3,735,147, Cl. 307-119.000.
Kubilos, Charles, to Abex Corporation. Method and apparatus for controlling displacement of a variable volume pump or motor. 3,733,963, Cl. 91-3.000.
Kubotatekko Kabushikigaisha: *See—*
Murayama, Yoshinobu; Morimoto, Tadashi; Kinoshita, Mikio; and Yamanishi, Isamu, 3,733,912.
Kudelski, Stefan. Magnetic tape recorder with constant tape tension. 3,734,368, Cl. 226-44.000.
Kuhnelt, Herbert F., to Hoerbiger Ventilwerke Aktiengesellschaft. Shuttle valve. 3,734,132, Cl. 137-625.490.
Kukla, Cassimer M.; and Warnick, Alan, to Ford Motor Company. Sensing system for a chemiluminescent instrument. 3,734,691, Cl. 23-253.00r.
Kumiai Chemical Industry Co., Ltd., mesne: *See—*
Kawada, Seigo; Ito, Hideo; Matsui, Kazuo; and Kasugai, Hiroshi, 3,734,927.
Kun, Zoltan K., to Zenith Radio Corporation. p-n Junction semiconductor devices. 3,735,212, Cl. 317-234.00r.
Kunert, Heinz-Peter, to U.S. Philips Corporation. Device for the comparison of two pulse-series frequencies. 3,735,218, Cl. 328-134.000.
Kupper, Walter, to Mettler Instrument AG. Balance. 3,734,218, Cl. 177-203.000.
Kurichh, Sham L.: *See—*
Davis, Dennis J.; Kurichh, Sham L.; and Pataky, Gilbert A., 3,734,573.
Kuroda Seiko Company, Ltd.: *See—*
Kanebako, Hiroumu; and Wada, Kazutoshi, 3,734,513.
Kurtz, Donald W.; and Harbison, Judith M., to Eastman Kodak Company. Silver halide containing reactive quaternary salts nucleating agents. 3,734,738, Cl. 96-107.00r.
Kushnir, Bud W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David J. I. Preparation of powder composition for making dispersion strengthened binary and higher nickel base alloys. 3,734,713, Cl. 75-.5ac.
Kuslich, John S. Shell catcher for repeating firearms. 3,733,728, Cl. 42-1.00r.
Kyriakis, Alexander: *See—*
Aylies, Sargeant E.; Hillhouse, Mial T.; Kyriakis, Alexander; and Pengilly, Brian W., 3,734,866.
L & S Associates, Incorporated: *See—*
Sekuler, Stanley H., 3,734,875.
La Barge, Inc.: *See—*
Helliker, Conrad Dean; and Wilkinson, Terry E., 3,735,342.
La Duca, Joseph, to Bell Telephone Laboratories, Incorporated. Line voltage regulator utilizing line responsive timing circuit to modulate duty cycle of controllable rectifier. 3,735,239, Cl. 321-16.000.
La Monica, John, to Baseball game. . 3,734,501, Cl. 273-93.00r.
La Roche, Rene, to Aluminium Suisse S.A. Process for treating surfaces of aluminium and aluminium alloys. 3,734,782, Cl. 148-6.300.
LABAZ: *See—*
Gaudin, Jean Joseph, 3,734,351.
Labelle, Richard L. Endless track vehicle. 3,734,221, Cl. 180-5.00r.
Lachinov, Alexandr Alexandrovich: *See—*
Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich, 3,734,428.
Lachowicz, Stanley F.: *See—*
Waterman, Neil S.; and Lachowicz, Stanley F., 3,734,350.
Lackstone, Allan John: *See—*
Ziener, Otto, 3,734,000.
Lado, Ernest Andres, to Nichols Engineering & Research Corporation. Method of producing refractory material. 3,734,755, Cl. 106-73.400.
Lafayette Instrument Company, Inc.: *See—*
Wastl, Max E.; and Shirley, Richard L., 3,734,603.
Lafond, Renald L.: *See—*
Gupta, Virendra N.; and Lafond, Renald L., 3,734,683.
Laftsidis, Stergois: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergois, 3,734,672.
Laithwaite, Peter: *See—*
Dodman, David; Laithwaite, Peter; Leyland, Boris Nicholas; and Quan, Peter Michael, 3,734,886.
Lakomsky, Viktor Iosifovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Reznitsky, Kommunarsk; and Pilipchuk, Viktor Romanovich, 3,734,165.
Lamb, Charles A.: *See—*
Bennett, Weston T.; Coveney, Donald B.; Lamb, Charles A.; and Hanson, Jonathan Leslie, 3,734,822.
Lamb, Frank, to Ciba-Geigy Corporation. Bonded polyester fibrous material and method. 3,734,796, Cl. 156-176.000.
Lanahan, Bernard E.: *See—*
Cancilla, Edward; and Lanahan, Bernard E., 3,734,064.
Land, Karl M.: *See—*
Aldrich, Charles A.; and Land, Karl M., 3,735,338.
Landvogt, Gunther Friedrich, to U.S. Philips Corporation. Apparatus for linearly converting a mechanical quantity into a frequency. 3,733,890, Cl. 73-67.200.
Lane, Buddy F.; and Church, Donald E., to Avco Corporation. Brake lining wear warning system. 3,735,343, Cl. 340-52.00a.
Lang, Franz. Motor vehicle safety device. 3,734,533, Cl. 280-150.00b.
Lang, Gregor L. Alternating current relays. 3,735,301, Cl. 335-244.000.
Lang, Winfried: *See—*
Bienert, Klaus; Lang, Winfried; and Nordt, Egon, 3,734,817.
Lange, Gunther; and Ulderup, Jurgen, to Lemforder Metallwaren AG. Method for producing a sliding bearing for a universal joint. 3,733,668, Cl. 29-149.5nm.
Langer, Arthur W., Jr.; and Whitney, Thomas A., to Esso Research and Engineering Company. Inorganic lithium-amine complexes. 3,734,963, Cl. 260-563.00r.
Langer, Helmut; and Fengler, William W., to Machlett Laboratories, Incorporated, The. Rotating anode balance and getter. 3,735,176, Cl. 313-60.000.
Langford, Graham G., to Sertex Company of North America, Inc. Color monitoring apparatus. 3,735,143, Cl. 250-226.000.
Lanier Enterprises, Inc.: *See—*
Lanier, John E., 3,734,235.
Lanier, John E., to Lanier Enterprises, Inc. Collapsible sawhorse. 3,734,235, Cl. 182-153.000.
Lankton, Gordon B., to Dennison Manufacturing Company, mesne. Assembly of attachments and method of manipulating the same. 3,733,657, Cl. 24-150.0fp.
Lapidus, Herbert; and Mackles, Leonard, to Bristol-Myers Company. Clear liquid laxative-antacid composition. 3,735,007, Cl. 424-158.000.
Lapin, Zeverly L.: *See—*
Christensen, Frank G.; and Wulff, Rafael T., 3,734,219.
Lappin, Gerald R.: *See—*
Kibler, Charles J.; and Lappin, Gerald R., 3,734,874.
Larkin, John M. Electric induction heating furnace and method for preheat thereof. 3,735,009, Cl. 13-29.000.
Larkin, Sam. Sand mold formation. 3,734,163, Cl. 164-187.000.
Larsen, Edwin M.; and Gil-Arnao, Francisco C., to Wisconsin Alumni Research Foundation. Process for separation of hafnium from zirconium. 3,734,689, Cl. 23-24.00z.
Larsen, Hans Christian, to Alfa-Laval AB. Method of obtaining meat with a predetermined fat content. 3,734,741, Cl. 99-107.000.
Larsen, Herbert; and Martin, Helmut, 50% to Siemens Aktiengesellschaft and 50% to Kabel- und Metallwerke Guthoffnungshutte Aktiengesellschaft. High precision hollow conductor structure for the transmission of electromagnetic waves, and method of making thesame. 3,733,693, Cl. 29-600.000.
Larsson, Lars Herbert: *See—*
Flinth, Rune Nils Allan; Ahl, Nils Boran; Larsson, Lars Herbert; and Nordstrom, Kjell Helge, 3,734,217.
Lasky, Daniel J., to International Business Machines Corporation. Apparatus for developing photographic materials. 3,733,993, Cl. 95-89.00r.
Last, Anthony Edward Walter, to British Steel Piling Company Limited, The. . 3,734,206, Cl. 173-137.000.
Latash, Jury Vadimovich; Medovor, Boris Izrailevich; Leibenzon, Semen Abramovich; and Kaganovsky, Gary Petrovich, to Institut Electrosvarki Imeni Patona. Installations for the electroslag remelting of metallic consumable electrodes. 3,734,164, Cl. 164-252.00.
Latch Plastics, Inc.: *See—*
Hughes, Robert T.; and Adams, Houston L., 3,734,551.
Launder, Richard L. Dual digging tooth retainer. 3,733,722, Cl. 37-142.00a.
Laurent, Harold J.: *See—*
Dorsey, Charles M.; Laurent, Harold J.; Slavin, Michael; and Stauffer, Reuben Laverne, 3,735,268.
Lawrence, Frank L., to Smith-Berger Manufacturing Corporation. Yarder having an infinite ratio driving interlock for spooling drums. 3,733,812, Cl. 60-6.000.
Lawson, Jack M. Sewing guide for pin strip. 3,734,040, Cl. 112-153.000.
Le Breton, Albert F., to Westinghouse Electric Corporation. Tandem thrust bearing. 3,734,581, Cl. 308-160.000.

Le Comte, Corstiaan, to N.V. Hollandse Signaalapparaten. Digital sine/cosine generator. 3,735,110, Cl. 235-197.000.
Le Gault, Richard L.; and Andersson, Per Lennart, to Heller Roberts Instruments Corporation. High speed number printer. 3,734,010, Cl. 101-79.000.
Leader, William M.: *See—*
Lucid, Michael F.; and Leader, William M., 3,734,696.
Leaf, H. Vincent: *See—*
O'Donnell, Paul E.; and Leaf, H. Vincent, 3,735,331.
Lear Siegler, Inc.: *See—*
Brown, Carlton E., 3,733,995.
Hedrick, Geoffrey S., 3,735,341.
Leclercq, Jean-Paul. Decorative facing for walls, facades, ceilings and the like. 3,733,766, Cl. 52-480.000.
Lee Alex Y.: *See—*
Gershberg, David N.; and Lee Alex Y., 3,735,409.
Lee, Bong Kuk: *See—*
Ryu, Dewey Y.; Lee, Bong Kuk; and Thoma, Richard W., 3,734,830.
Lee, Gary; and Tucker, Carl. Pet toilet. 3,734,057, Cl. 119-1.000.
Lee, Raymond, Organization, Inc., The: *See—*
Paurice, Torindo R., 3,734,093.
Leeds, William George, England: *See—*
Dowding, John; and Leeds, William George, England, 3,734,923.
Lefever, Kenneth W., to Valdez-Lefever Arctic Gas and Oil Transportation Corporation. Pipeline contents igniter. 3,734,136, Cl. 138-103.000.
Legalprint: *See—*
Cornell, Clark; Himler, Gary J.; and Ahlstrom, John F., 3,735,348.
Leibenzon, Semen Abramovich: *See—*
Latash, Jury Vadimovich; Medovor, Boris Izrailevich; Leibenzon, Semen Abramovich; and Kaganovsky, Gary Petrovich, 3,734,164.
Leibowitz, Lawrence M., to United States of America, Navy. Pulse width coded signal detector. 3,735,271, Cl. 328-112.000.
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, to Gachot, Jean. Fluid controlled logic circuits. 3,734,131, Cl. 137-608.000.
Lely Corporation, The: *See—*
Bratschitsch, John, 3,734,777.
Lemelson, Jerome H. Code scanning system. 3,735,350, Cl. 340-146.3sy.
Lemforder Metallwaren AG: *See—*
Lange, Gunther; and Ulderup, Jurgen, 3,733,668.
Lenaeus, George E.: *See—*
Chia, Enrique C.; Ward, George C.; and Lenaeus, George E., 3,734,162.
Lengel, George W. Form for molding a bore in concrete. 3,734,450, Cl. 249-146.000.
Leonard, Louis H., Jr., to Carrier Corporation. Rotary pump for heating and cooling system. 3,734,636, Cl. 415-88.000.
Leonard, Louis H., Jr., to Carrier Corporation. Magnetically driven pump for absorption refrigeration system. 3,734,651, Cl. 417-420.000.
Leonard, Richard L.; and Carey, Donald F., to United States of America, Interior, mesne. Fiber bundle assembly. 3,734,989, Cl. 264-135.000.
Leonard, Verna M. Scale fingering sliderule. 3,733,956, Cl. 84-471.000.
Lerner, Julius; and Mayer, Robert, to Sun Oil Company, mesne. Arrangement for multiplexing of a plurality of remotely-located capacitive probes. 3,735,371, Cl. 340-177.0ca.
Lester, Robert W., to Recognition Devices, Inc. Electronic recognition door lock. 3,733,861, Cl. 70-153.000.
Levavasseur, Andre Adolphe Rene: *See—*
Roe, Rene Pierre Victor; Levavasseur, Andre Adolphe Rene; Sureau, Robert Frederic Michel; and Alicot, Marie-Josephe Jeanne, 3,734,905.
Levenhagen, Alvin W., to North American Rockwell Corporation. Nestable and stackable container. 3,734,341, Cl. 220-97.000.
Levi, Ralph S.: *See—*
Schneller, George H.; Levi, Ralph S.; Levin, Howard J.; and Goodsir, Stephen W., 3,734,098.
Levin, Howard J.: *See—*
Schneller, George H.; Levi, Ralph S.; Levin, Howard J.; and Goodsir, Stephen W., 3,734,098.
Levy, Warren W.: *See—*
Barnett, Roy F.; Levy, Warren W.; and Simons, Dolph, 3,735,198.
Lewis, Richard L., to Bendix Corporation, The. Load sensing control device for a vehicle hydraulic braking system. 3,734,574, Cl. 303-22.00r.
Ley, Erich Josef. Tape recorder for teaching, particularly for language teaching. 3,733,719, Cl. 35-35.00c.
Leyland, Boris Nicholas: *See—*
Dodman, David; Laithwaite, Peter; Leyland, Boris Nicholas; and Quan, Peter Michael, 3,734,886.
Li, Norman N.; and Asher, William J., to Esso Research and Engineering Company. Liquid membrane artificial lung. 3,733,776, Cl. 55-16.000.
Libbey-Owens-Ford Company: *See—*
Ritter, George F., Jr., 3,734,706.
Liberman, Milton. Clip for attaching power ducts to T-bars. 3,734,436, Cl. 248-58.000.
Liberty Glass Company: *See—*
Russell, Robert C.; and Entler, Richard W., 3,734,765.
Licata, Joseph, to Lutron Electronics Co., Inc. Heat sink wall plate with off-center mounting openings. 3,735,020, Cl. 174-66.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See—*
Probst, Helmut, 3,735,292.
Raatz, Eckart, 3,735,225.
Lieberman, Daniel. Cascaded multicircuit, multirefrigerant refrigeration system. 3,733,845, Cl. 62-335.000.
Liedtke, Ronald R.: *See—*
Kossoff, Joseph; Liedtke, Ronald R.; and Young, Joe W., 3,733,743.
Liepert, Reinhold, to Patent-Freuhand-Gesellschaft for Elektrische Gluhlampen mbH. Photoflash lamp. 3,734,678, Cl. 431-93.000.
Lincoln, Dale, to Systron-Donner Corporation. Locking cabinet assembly. 3,734,335, Cl. 220-4.00r.
Lincoln, Edgar Barry: *See—*
Little, Robert K.; and Lincoln, Edgar Barry, 3,734,133.
Lindsay Wire Weaving Company, The: *See—*
Griffith, David W., 3,734,795.
Linenberg, Amos, to Hydronautics-Israel Ltd. Sampling valve and compound detection system. 3,733,908, Cl. 73-422.0gc.
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwick H., to Anaconda Wire and Cable Company. Semiconducting composition and cable jacketed therewith. 3,735,025, Cl. 174-120.0sc.
Linkus, Joseph Anthony: *See—*
Dietrick, Eugene Lewis; and Linkus, Joseph Anthony, 3,733,944.
Linn, Wallace L.; Kilmer, Bill G.; and Weber, Richard H., to Mallory, P. R., & Co., Inc. Drive arrangement including a synchronous motor. 3,735,164, Cl. 310-41.000.
Lipowski, Stanley A.; and Miskel, John J., Jr., to Diamond Shamrock Corporation. Quaternized oligomers based on ureas, guanidine and guanylurea. 3,734,889, Cl. 260-77.50c.
Lippmann, Hans-Joachim; and Schenk, Horst, to Siemens Aktiengesellschaft. Method of manufacture of short-circuit rings. 3,733,688, Cl. 29-523.000.
Lipscomb, Walter Peter; and Shelburne, Eli Bently, Sr., to Allied Chemical Corporation. Apparatus for splaying and depositing nonwoven filamentary structures. 3,734,803, Cl. 156-441.000.
List, Hans: *See—*
Zieringer, Rudolf, 3,733,661.
Litchford, George B., to Litchstreet Co. Common azimuth sector indicating system. 3,735,408, Cl. 343-112.0ca.
Litchstreet Co.: *See—*
Litchford, George B., 3,735,408.
Little, Robert K.; and Lincoln, Edgar Barry, to RKL Controls, Inc. Diverter pinch valve. 3,734,133, Cl. 137-636.000.
Litton Systems, Inc.: *See—*
Anderson, Charles Elmor; and Cardoza, Clarence Anthony, 3,735,188.
Livera, Phillip A., to Westinghouse Electric Corporation. Rapid release mold. 3,734,658, Cl. 425-78.000.
Lobb, Alexander James, to British Oxygen Company Limited, The. Thermodynamic reciprocating machine. 3,733,837, Cl. 62-6.000.
Locascio, Jack J., to International Playtex Corporation. Girdle with waistline area control. 3,734,101, Cl. 128-533.000.
Lockheed Aircraft Corporation: *See—*
Ebin, Joseph A.; and Logan, John W., 3,735,122.
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 3,734,546.
Surwill, Michael, 3,734,481.
Wirt, Leslie S., 3,734,234.
Loebner, Egon E.: *See—*
Justice, Gregory; and Loebner, Egon E., 3,734,631.
Loeffler, Romain Eugene; and Plotts, Vernon Charles, to Johns-Manville Corporation. Apparatus and method to produce cylindrical articles. 3,733,677, Cl. 29-411.000.
Loewe-Agsta GmbH: *See—*
Richter, Heinz; and Thiele, Werner, 3,735,236.
Loewy, Raymond: *See—*
Butler, David R., 3,733,755.
Lofink, Joseph P.: *See—*
Evans, Howard J.; Lofink, Joseph P.; and Bonner, Joseph A., 3,733,910.
Lofquist, Robert Alden, to Allied Chemical Corporation. Esterification of terephthalic acid with an alkylene glycol in the presence of an alkaline salt of a glycine compound. 3,734,89[illegible], Cl. 260-75.00r.
Log Etronics Inc.: *See—*
McIntosh, Walter L.; and Schmidt, Dale M., 3,734,630.
Logan, John W.: *See—*
Ebin, Joseph A.; and Logan, John W., 3,735,122.
Logemann, Willy: *See—*
Ambrogi, Vittorio; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,734,910.
Logie, Charles F.: *See—*
Schulte, Donald W.; and Logie, Charles F., 3,733,759.
Lohr, Ernest F.: *See—*
Doll, Peter A.; Cappotto, Samuel D.; Diamond, Herrick R.; and Lohr, Ernest F., 3,734,262.
Lohr, Manfred, to Hoesch Aktiengesellschaft. Hydropneumatic shock absorbing arrangement for automotive vehicles or the like. 3,734,478, Cl. 267-34.000.
Long, Delmer B.; and Shelton, Lewis E. Truck load bed boat loader and carrier. 3,734,321, Cl. 214-450.000.
Long, Edward M., to Ampex Corporation. Acoustic lens. 3,735,336, Cl. 340-8.001.
Long, Ernest L.: *See—*

Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,735,240.

Longbrake, Howard R. Sharpener for arrowheads. 3,733,933, Cl. 76-88.000.

Loos, Herbert, to Hurth, Carl, Maschinen-und Zahnradfabrik. Toothed tool for working of gears. 3,733,886, Cl. 72-469.000.

Loose, Robert A.: *See—*
Brown, William W.; Loose, Robert A.; and Vogel, John A., 3,734,823.

Loov, Nils Gosta. Wedge for use in a wedge connection. 3,734,549, Cl. 287-20.92g.

Loper, Ronald Lee, to RCA Corporation. Means for superimposing a marker signal onto a composite video signal. 3,735,038, Cl. 178-7.30r.

Lorenz, Walter; and Hammann, Ingeborg, to Farbenfabriken Bayer Aktiengesellschaft. 2-Oxodihydroquinolinethiono-phosphoric (phosphonic) acid esters. 3,734,914, Cl. 260-268.00p.

Lorthioir, Gerard Louis: *See—*
Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, 3,735,373.

Lory Industries, Inc.: *See—*
Lory, John S.; and Purrington, Suzanne T., 3,734,793.

Lory, John S.; and Purrington, Suzanne T., to Lory Industries, Inc. Nitrocellulose combustible composition having salt of polyethylenimine as oxidizer. 3,734,793, Cl. 149-100.000.

Losee, Kathryn A.: *See—*
Bernstein, Jack; and Losee, Kathryn A., 3,734,953.

Losito, Anthony V., to Losito Mushroom Corporation. Automatic mushroom trimming machine. 3,734,004, Cl. 99-637.000.

Losito Mushroom Corporation: *See—*
Losito, Anthony V., 3,734,004.

Loubier, Robert J.: *See—*
Davies, Gilbert E.; Loubier, Robert J.; Weston, John M.; and Muhn, Robert A., 3,734,660.

Loveland, Malcolm W., to Atlas Pacific Engineering Company, mesne. Means for peeling pineapples. 3,734,002, Cl. 99-543.000.

Low, George M. Suppression of flutter. 3,734,432, Cl. 244-77.00g.

Lowe, Richard Douglas, to Electronic Associates Inc. RF/DC generator for quadrupole mass analyzer. 3,735,287, Cl. 331-106.000.

Lubas, Joseph P., to Singer Company, The. Lower guard for circular saws. 3,733,701, Cl. 30-391.000.

Lucas, Arthur C., to EG&G, Inc. Thermoluminescent radiation detector. 3,735,134, Cl. 250-71.00r.

Lucid, Michael F.; and Leader, William M., to Kerr-McGee Corporation. Vanadium recovery from acidic solutions. 3,734,696, Cl. 23-312.0me.

Luckenbill, Lawrence F.: *See—*
Finney, Robert R.; Luckenbill, Lawrence F.; and Kissell, Gerry E., 3,734,112.

Lucker, Jerome; Oakes, Andrew A.; and Foster, Thomas H., Jr., to Becton Dickson and Company. Alveolar air breath sampling and analyzing apparatus. 3,734,692, Cl. 23-254.00r.

Ludeman, Harold H. Cheese package and packaging process. 3,734,750, Cl. 99-178.

Ludwig, Maier, to Monsanto Company. Polyphosphinic acids and salts thereof. 3,734,954, Cl. 260-502.40p.

Ludwig, Milton; deceased (by Cline, Gina L.; executrix). Dynamic damper for offshore structures. 3,733,834, Cl. 61-46.000.

Lukaszczyk, Alfons; and Pissiotas, Georg, to Ciba Limited. Herbicidal method employing chloro-methane sulfonanilides. 3,734,710, Cl. 71-103.000.

Lummus Industries, Inc.: *See—*
Van Doorn, Donald W., 3,733,769.

Lundahl, Ezra C., Inc.: *See—*
Lundahl, Ezra Cordell, 3,734,568.

Lundahl, Ezra Cordell, to Lundahl, Ezra C., Inc. Air delivery system. 3,734,568, Cl. 302-47.000.

Lunde, Thomas I. Container fastener means. 3,734,442, Cl. 248-361.000.

Lutron Electronics Co., Inc.: *See—*
Licata, Joseph, 3,735,020.

Lutz, Garson A.: *See—*
Bereday, Sigmund; Kolic, Edwin S.; Lutz, Garson A.; Grotta, Henry M.; and Gibbs, John H., 3,734,784.

Lutz, Robert J.: *See—*
Cantagallo, Raymond E.; and Lutz, Robert J., 3,733,849.

Lux Company, Inc.: *See—*
Lux, Philip G., 3,734,441.

Lux, Philip G., to Lux Company, Inc. Telescopic support and improved means of locking the same. 3,734,441, Cl. 248-354.00c.

Ly, Manuel G.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,734,937.

Lyco Manufacturing, Inc.: *See—*
Sannipoli, Alfred L., 3,734,387.

Lynch, Peter D.; Oldfield, Dempsey R.; and Zifka, Donald K., to Hyster Company. Container handling frame. 3,734,324, Cl. 214-621.000.

Lynn, John Wendell: *See—*
Hauser, Charles Frank; and Lynn, John Wendell, 3,734,959.

M & T Chemicals Inc.: *See—*
Passal, Frank, 3,734,840.

Ma, William Y. L.: *See—*
Ippolito, Amos D.; and Ma, William Y. L., 3,734,340.

Maat, Jan Philippus: *See—*
Buchner, Robert Bertold; and Maat, Jan Philippus, 3,735,049.

Mac Kenzie, Gerald L.: *See—*
Moy, Bertram K.; Mac Kenzie, Gerald L.; and Pisacane, Frank J., 3,734,789.

MacDuff, Stanley I., to Bendix Corporation, The. Emergency pump system with duplicate fluid line. 3,733,817, Cl. 60-405.000.

MacDuff, Stanley I., to Bendix Corporation, The. Auxiliary electric motor drive for power steering pum. 3,734,226, Cl. 180-79.20r.

Macheel, Gary W., to Hydril Company. Remote station address verification using address conditioned encoding. 3,735,351, Cl. 340-146.10c.

Machlett Laboratories, Incorporated, The: *See—*
Langer, Helmut; and Fengler, William W., 3,735,176.

Mackles, Leonard: *See—*
Lapidus, Herbert; and Mackles, Leonard, 3,735,007.

MacLeod, David E., to Carrier Corporation. Self-contained air conditioning unit. 3,733,843, Cl. 62-262.000.

Macovski, Albert, to American Express Investment Management Company. Real time interferometry contour mapping system. 3,735,036, Cl. 178-6.800.

Madar, Roland: *See—*
Barberon, Michel; Fruchard, Elaine, nee Triquet; Eruchart, Robert; Lorthioir, Gerard Louis; and Madar, Roland, 3,735,373.

Madden, Bernard G. Attitude controlled valve. 3,734,113, Cl. 137-40.000.

Madures, John W.: *See—*
Buchanan, William Michaux; and Madures, John W., 3,734,104.

Maeda, Haruo, to Matsushita Electric Industrial Co., Ltd. Continuous dynode channel type secondary electron multiplier. 3,735,184, Cl. 313-105.000.

Maeda, Katsutoshi; and Kobayashi, Norio, to Kabushiki Kaisha Daini Seikosha. Winding stem bearing assembly for watches. 3,733,800, Cl. 58-140.00r.

Maeda, Keisuke: *See—*
Hayashi, Toshio; Maeda, Keisuke; and Ohta, Yoshiharu, 3,733,986.

Maekawa, Kenichi: *See—*
Fukugami, Goro; Tamura, Chiaki; Taguchi, Masayuki; and Maekawa, Kenichi, 3,733,952.

Maenicke, Eckart, to Siemens Aktiengesellschaft. Circuit arrangement for determining the distance of fault locations in line short-circuits. 3,735,204, Cl. 317-27.00r.

Mager, Leon A.: *See—*
Delaney, Lyle F.; and Mager, Leon A., 3,735,354.

Magnavox Company, The: *See—*
Richeson, William E., Jr., 3,735,034.

Maholick, Andrew Walter; Newlin, Frank Allen, III; Snyder, Ramon Eugene; and Stager, Stanley Ray, III, to International Business Machines Corporation. Priority system for a communication control unit. 3,735,357, Cl. 340-172.500.

Maier, Andreas: *See—*
Franz, Peter; and Maier, Andreas, 3,734,415.

Maier, Horst; Arbeitland, Erich; and Kleber, Peter, to Messerschmitt Bolkow-Blohm Gesellschaft beschrankter Haftung. Mechanism for unfolding accordian-like folded structural elements. 3,733,758, Cl. 52-113.000.

Mainstone, Kenneth A.: *See—*
Harmon, Paul E.; and Mainstone, Kenneth A., 3,734,662.

Majima, Mituhiro: *See—*
Murase, Shigeo; and Majima, Mituhiro, 3,734,677.

Makhover, Jury Meerovich: *See—*
Dolgolenko, Anatoly Alexandrovich; Onokhov, Pavel Pavlovich; Makhover, Jury Meerovich; and Gudovich, Alexandr Markovich, 3,734,271.

Makula, Daniel; and Gonthier, Beatrice, to Progil. 1,2,4-Oxadiazine-3-ones. 3,734,908, Cl. 260-244.00r.

Maley, Gerald A., to International Business Machines Corporation. Error correcting system and method for monolithic memories. 3,735,105, Cl. 235-153.0ac.

Mallory, P. R., & Co., Inc.: *See—*
Bucklin, James B.; and Utken, Jay, 3,735,318.
Chestnut, Benjamin F.; and Wiser, Joseph E., 3,735,062.
Linn, Wallace L.; Kilmer, Bill G.; and Weber, Richard H., 3,735,164.
Pomerantz, Daniel I., 3,734,123.

Mandorf, Victor, Jr.; and Montgomery, Lionel C., to Union Carbide Corporation. High purity hot pressed boron nitride. 3,734,997, Cl. 423-290.000.

Mangum, Elmus F. Lawn edger. 3,734,196, Cl. 172-16.000.

Manizza, Guelfo A., to Continental Can Company, Inc. Carton with shortened web corners. 3,734,391, Cl. 229-31.00r.

Mann, Helmut, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Process for making semiconductor devices. 3,733,691, Cl. 29-588.000.

Mannesmann Aktiengesellschaft: *See—*
Wessel, Otto, 3,733,678.

Manning, Randy Marshall, to AMP Incorporated. Lead frames and method of making same. 3,735,017, Cl. 174-52.00s.

Manolis, John. Machine for producing self-opening envelopes. 3,733,982, Cl. 93-76.000.

Manshausen, Theo: *See—*
Weigel, Horst; Wilbertz, Otto; Manshausen, Theo; and Kryczun, Alfred, 3,734,414.

Mantsch, Carol: *See—*

Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.

Manufacture des Montres Rolex S.A. Bienne: *See*—
Girard, Pierre, 3,733,810.

Marathon Oil Company: *See*—
Gogarty, William B., 3,734,189.
Jones, Stanley C., 3,734,185.
Norton, Charles J.; and Falk, David O., 3,734,187.
Rhudy, John S.; Fullinwider, James H.; and Ver Steeg, David J., 3,734,183.

Marconi Company Limited, The: *See*—
Mayhew, Antony James; and Cheale, Leonard Frederick, 3,734,616.
Yates, Michael Harold John, 3,735,356.

Mardas, Alexis, to Modern Telephones Limited. Electrical storage circuit. 3,735,050, Cl. 179-90.00b.

Marhold, Werner: *See*—
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,734,125.

Marker, Hannes: *See*—
Payrhammer, Bernd, 3,734,521.

Marscher, William D.; and Wertheimer, Harry P. Pressure-to-electric, long life transducer. 3,735,323, Cl. 338-41.000.

Marsh, Richard P.; Whannel, Ralph E.; and Basso, Julius C. Device for forming and handling concrete pipe. 3,734,452, Cl. 249-171.000.

Martin, Donald J.: *See*—
Greco, Carl C.; and Martin, Donald J., 3,734,753.

Martin, Helmut: *See*—
Larsen, Herbert; and Martin, Helmut, 3,733,693.

Martin, Helmut; and Krisch, Lothar, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. System for transmitting digital signals. 3,735,056, Cl. 179-170.00e.

Martin, Johannes Josef. Slag removal mechanism with fluid seal. 3,734,037, Cl. 110-165.00r.

Martin, Manfred: *See*—
Scharfe, Gerhard; Swodenk, Wolfgang; Grolig, Johann; and Martin, Manfred, 3,734,950.

Martin, Paul H.; and McKee, William C., to Diesel Equipment Limited. Self storing vehicle loading platform. 3,734,239, Cl. 187-9.000.

Martin, Robert L.; and Mellyn, Lawrence P., to General Electric Company. Decorative support and method of mounting. 3,735,118, Cl. 240-10.00r.

Maruyama, Susumu, to Auto-Time Distributors, Inc. Lighter. 3,734,680, Cl. 431-132.000.

Marx, Louis, & Co., Inc., mesne: *See*—
Seiersen, William K., 3,734,498.

Maschinenfabrik Alfred Schmermund: *See*—
Knecht, Siegfried; and Demny, Helmut, 3,734,804.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg: *See*—
Elsbett, Gunter; and Elsbett, Ludwig, 3,733,973.

Maschinenfabrik Moenus Aktiengesellschaft: *See*—
Bechtold, Johann, 3,733,632.

Masino, Carlo; and Gilardino, Paolo, to AMP Incorporated, mesne. Methods for insulating wire terminations. 3,734,992, Cl. 264-159.000.

Mason, Merle C. Lift device for variably displaying and facilitating repairs of vehicles such as snowmobiles. 3,734,466, Cl. 254-89.000.

Massey, B. & S., Limited: *See*—
Foster, John; and Wilson, Geoffrey, 3,733,884.

Massey-Ferguson Inc.: *See*—
Van Dest, Jean Claude, 3,734,129.

Masui, Michio, to Tokyo Shibaura Electric Company, Ltd. Fault detecting apparatus for a capacitor type potential divider having an amplifier. 3,735,250, Cl. 324-51.000.

Mathews, Bernard C.: *See*—
Pool, Stuart D., 3,734,102.

Mathews, Bernard C. Concave for combines. 3,734,103, Cl. 130-27.001.

Mathiesen, Odd: *See*—
Poppe, Dag; and Mathiesen, Odd, 3,735,410.

Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Current compensated detection circuits for photovoltaic cells. 3,734,632, Cl. 356-226.000.

Matsuda, Toshio: *See*—
Ueno, Ryuzo; Miyazaki, Tetsuya; Matsuda, Toshio; and Arai, Shinichiro, 3,734,748.

Matsuda, Yasuhisa, to Kabushiki Kaisha Koparu. Time switch apparatus. 3,733,911, Cl. 74-3.520.

Matsui, Kazuo: *See*—
Kawada, Seigo; Ito, Hideo; Matsui, Kazuo; and Kasugai, Hiroshi, 3,734,927.

Matsumoto, Kenichi: *See*—
Nagai, Hiroshi; Shirohama, Masatoshi; Matsumoto, Kenichi; and Kamimura, Haruo, 3,733,871.

Matsumura, Kenneth N. Method and device for purifying blood. 3,734,851, Cl. 210-22.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,735,047.
Maeda, Haruo, 3,735,184.
Murase, Shigeo; and Majima, Mituhiro, 3,734,677.
Takakuwa, Shigeru; Iwami, Kenichi; and Ide, mitsuo, 3,733,723.

Matsushita Electric Works, Ltd.: *See*—
Bonteil, Robert C., 3,733,716.

Mattel, Inc.: *See*—
Baynes, William R.; and Handler, Elliot, 3,734,404.
Hiltpold, John P.; and Soulakis, George, 3,733,744.
Kossoff, Joseph; Liedtke, Ronald R.; and Young, Joe W., 3,733,743.

Mattson, Martin L. Auxiliary wheel units for the running boards of a snowmobile. 3,734,532, Cl. 280-150.00a.

Maucher, Lawrence Ambrose, to Du Pont de Nemours, E. I., and Company. Method for welding titanium clad steel. 3,733,686, Cl. 29-472.000.

Mauduech, Robert R. Companding pulse code modulation system. 3,735,264, Cl. 325-38.000.

Maulding, Donald Roy, to American Cyanamid Company. Novel polychloro-1,3-dioxolanes. 3,734,862, Cl. 252-188.3cl.

Maurer, Spencer B. Rotary power tool with centrifugal coupling means. 3,734,205, Cl. 173-93.500.

Mauri Brothers & Thomson Limited: *See*—
Connor, Desmond John, 3,733,714.

Maurischat, Gunter: *See*—
Szostak, Noland; Hartwig, Karl; and Maurischat, Gunter, 3,734,604.

Maxey, Edwin M.: *See*—
Uelzmann, Heinz; and Maxey, Edwin M., 3,734,868.

May & Baker Limited: *See*—
Dowding, John; and Leeds, William George, England, 3,734,923.

May, Randall L., to Coleman Company, Inc., The. Adjustable catalytic heater and replaceable wick assembly therefor. 3,734,682, Cl. 431-324.000.

May, William E., to I-T-E Imperial Corporation. Arcing time relay. 3,735,201, Cl. 317-11.00r.

Mayer, Johann; and Schmidt-Hellerau, Christof, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Wood adhesive. 3,734,918, Cl. 260-29.300.

Mayer, Julius Robert: *See*—
Bassemir, Robert W.; and Mayer, Julius Robert, 3,733,709.

Mayer, Nicholas. Bootjack. 3,734,364, Cl. 223-116.000.

Mayer, Robert: *See*—
Lerner, Julius; and Mayer, Robert, 3,735,371.

Mayhew, Antony James; and Cheale, Leonard Frederick, to Marconi Company Limited, The. Apparatus for the manufacture of printed circuits. 3,734,616, Cl. 355-89.000.

Maytag Company, The: *See*—
Nelson, Robert B., 3,734,290.
Smith, Thomas R., 3,733,712.

Mc Cornell, John F.: *See*—
Pecoraro, George A.; Mc Cornell, John F.; and Knavish, Leonard A., 3,734,701.

Mc Coy, John J., to General Electric Company. Apparatus for producing UO_2 powder. 3,734,694, Cl. 23-262.000.

Mc Kay, Robert H., to Steelcase Inc. Hinge for knockdown cabinet. 3,733,651, Cl. 16-178.000.

Mc Mann, Renville H.: *See*—
Smith, Clyde W.; and Mc Mann, Renville H., 3,735,026.

Mc Namee, James W., to General Motors Corporation. Lamp failure indicating apparatus. 3,735,378, Cl. 340-251.000.

McCall, Kenneth E.; and Reese, Donald H., to Arcair Company. Cutting and gouging torch. 3,735,085, Cl. 219-70.000.

McCarter, William L.: *See*—
Varrin, Andre J.; and McCarter, William L., 3,734,456.

McCarthy, Kenneth E.: *See*—
Dooley, Dan W., 3,734,352.

McClintock, William A., to Phillips Petroleum Company. Apparatus for in-line mixing of fluids. 3,734,111, Cl. 137-3.000.

McCray, Walter A., to Tesico International, Ltd. Clip for securing hot top lining slabs. 3,734,454, Cl. 249-202.000.

McCrea, Joseph, to Rockaway Corporation. Combination liner and lid for wirebound container. 3,734,334, Cl. 217-3.00r.

McCulty, Wayne A. Grinder. 3,734,148, Cl. 241-82.100.

McCune, Ellsworth Jacob: *See*—
Hickey, Lionel Russell; and McCune, Ellsworth Jacob, 3,734,608.

McDonald, Glen L., to Boeing Company, The. Three terminal bidirectional conductive switching network. 3,735,158, Cl. 307-305.000.

McDonald, Harold, to Stauffer Chemical Company. Corrosion resistant vinyl coated metal articles. 3,734,783, Cl. 148-6.15r.

McDonnell Douglas Corporation: *See*—
Andrews, Robert S., 3,733,969.
Smatko, Joseph S., 3,734,781.

McDonough, Thomas B. Photoflash lamp. 3,734,679, Cl. 431-93.000.

McElwain, John C.: *See*—
Young, John R.; and McElwain, John C., 3,733,854.

McGann, Rodney: *See*—
Wolf, Robert L.; and McGann, Rodney, 3,733,826.

McGarry, Frederick J.: *See*—
Small, Augustus B.; Gorman, Paul T.; and McGarry, Frederick J., 3,734,811.

McGraw-Edison Company: *See*—
Feldman, Edward, 3,734,052.

McIlhenny, Dudley F., to Clairol Incorporated. Actuator overcap. 3,734,353, Cl. 222-153.000.

McIntosh, Charles M.: *See*—
Hoogendoorn, Helen M.; and McIntosh, Charles M., 3,735,052.

McIntosh, Walter L.; and Schmidt, Dale M., to Log Etronics Inc. Copy density reading and exposure control system. 3,734,630, Cl. 356-203.000.

McKain, Rodger W.: *See—*
Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., 3,734,863.

McKay, Cameron Edward; and Barker, George Paton. Endless bucket dredge with articulated ladder and swell compensator. 3,734,564, Cl. 299-9.000.

McKee, William C.: *See—*
Martin, Paul H.; and McKee, William C., 3,734,239.

McKelvey, Richard E., to Kennametal, Inc. Cutting insert. 3,733,664, Cl. 29-95.000.

McKenzie, Joe A.; and Engel, Charles E., to United States of America, Navy. Solid state fuze select circuit. 3,734,021, Cl. 102-70.20r.

McKenzie, Ross A., to National Rubber Company, Limited. Elastomeric bumper. 3,734,557, Cl. 293-71.00r.

McMath, Jack A., to Dover Corporation. Spring biased safety valve. 3,734,115, Cl. 137-73.000.

McMurtry, David Harwood: *See—*
Harr, Jerome Danforth; and McMurtry, David Harwood, 3,735,142.

McNabney, Ralph; and Huibers, Th. A. Derk, to Airco, Inc. Process for producing ozone using a fluidized bed dielectric. 3,734,846, Cl. 204-176.000.

McNaughton, Andrew; Krebs, Ernst T.; and Gurchot, Charles. Highly soluble glucoside compositions and method of preparing same. 3,734,902, Cl. 260-210.00r.

McRae, james; Van Dyke, Donald C.; and Yano, Yukio, to United States of America, Atomic Energy Commission. Technetium bone scanning medium. 3,735,001, Cl. 424-1.000.

Mead Johnson & Company: *See—*
Corrigan, John R.; and Coates, William M., 3,734,917.

Mears, Elsie Marie: *See—*
Killmeyer, William S., 3,733,862.

Medenus, Berhard: *See—*
Mettig, Hermann; and Medenus, Berhard, 3,734,071.

Medical Innovations, Inc.: *See—*
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,734,087.

Medovor, Boris Izrailevich: *See—*
Latash, Jury Vadimovich; Medovor, Boris Izrailevich; Leibenzon, Semen Abramovich; and Kaganovsky, Gary Petrovich, 3,734,164.

Meeker, George W.; and Pertman, Allan E., to United States of America, Navy. Disabling circuit having a predetermined disabling interval. 3,735,154, Cl. 307-273.000.

Mefina S.A.: *See—*
Robert, Ramon Casas, 3,734,041.

Megowen, William J. Closure means and method. 3,733,771, Cl. 53-37.000.

Mein, Gary W. Vacuum cleaner head with shag rug rake. 3,733,646, Cl. 15-369.000.

Melbro Corporation: *See—*
Corini, Louis J., 3,733,836.

Mellyn, Lawrence P.: *See—*
Martin, Robert L.; and Mellyn, Lawrence P., 3,735,118.

Meloni, Robert A.: *See—*
Sauerwein, William D.; Meloni, Robert A.; and Walter, Harvey J., 3,734,459.

Memorex Corporation: *See—*
Kahn, Michael Edwin; Krajewski, William Frank; and Johnson, Terry Gordon, 3,735,219.

Menard, Edward A.; and Webster, David O., to International Business Machines Corporation. Rotary switch assembly with adjustable programming limit mechanism. 3,734,869, Cl. 200-11.00r.

Mende, Wilhelm, & Co.: *See—*
Ettel, Hubert, 3,734,669.

Mercier, Claude Andre: *See—*
Bredoux, Francois Jean-Marie; Mercier, Claude Andre; and Phlipot, Georges Achille, 3,735,135.

Mercier, Jacques H. Method of forming a locking ring for pressure vessel. 3,733,682, Cl. 29-450.000.

Merck & Co.: *See—*
Daoust, Donald R., 3,734,832.

Merck & Co., Inc.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,734,937.
Morse, Lewis D.; and Hammes, Paul A., 3,734,742.

Meridian Industries, Inc.: *See—*
Bolinger, John F.; and Kolster, Wilhelm K., 3,735,196.

Mesak, Charles, to Columbia Broadcasting System, Inc. Color frame lock control for signal reproducing systems. 3,735,015, Cl. 178-5.4cd.

Messa, Pietro. Attachment for yarn apparatus for automatically forming a fisherman knot or the like. 3,734,285, Cl. 209-2.000.

Messerschmitt Bolkow-Blohm Gesellschaft beschrankter Haftung: *See—*
Maier, Horst; Arbeitland, Erich; and Kleber, Peter, 3,733,758.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Moritz, Konrad Gustav, 3,734,173.

Messervey, William Albert: *See—*
Eastcott, Peter de Hertel; Messervey, William Albert; and Wyeth, William Albert, 3,734,257.

Mesta Machine Company: *See—*
Hlafcsak, Joseph L., 3,733,876.
Steimer, Robert G., 3,733,875.
Sutyak, John J., 3,733,943.

Metaillier, Roger, to Richier. Stabilizing device for appliances for public works, for handling and for maintenance. 3,734,531, Cl. 280-150.500.

Metal Castings Doehler Limited: *See—*
Paterson, Alan Hunter; Ewale, Thomas Matthew; and Rogers, John Samuel, 3,734,673.

Mettig, Hermann; and Medenus, Berhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. V-type reciprocable piston internal combustion engine. 3,734,071, Cl. 123-55.00v.

Mettler Instrument AG: *See—*
Kupper, Walter, 3,734,218.

Metzner, Robert G. Automatically controlled transportation system. 3,734,433, Cl. 246-1.00r.

Meyer, Maurice A., to Raytheon Company. Stepped beam instrument landing system. 3,735,407, Cl. 343-106.00r.

Mezey, Frank G. J. Non-slipping polygonal wrench. 3,733,937, Cl. 81-71.000.

Michaelis, Paul Charles, to Bell Telephone Laboratories Incorporated. Input for single-wall domain arrangement. 3,735,370, Cl. 340-174.0tf.

Michaelsen, Randolph C. H., to Global Marine Inc. Automatic hull cleaning system. 3,734,048, Cl. 114-222.000.

Michishita, Katsumi; Okami, Yuji; and Emura, Tokumatsu, to Nippon Kokan Kabushiki. Method and apparatus for detecting surface defects of moving bodies. 3,734,628, Cl. 356-200.000.

Midland-Ross Corporation: *See—*
Degelleke, Gerrit; and Bush, Robert E., 3,734,307.

Midway Manufacturing Company: *See—*
Brown, Richard L., 3,734,497.

Millenbach, Bluma. Construction for vented fecal receptacles. 3,734,096, Cl. 128-283.000.

Miller, Charles E., to General Radio Company. Process and apparatus for providing image brightness over a wide range of discharge repetition rates. 3,735,238, Cl. 321-15.000.

Miller, David E., to General Electric Company. Means for inihibiting flutter in a numerical display. 3,735,387, Cl. 340-324.00r.

Miller, David P.: *See—*
Kozak, Donald S.; and Miller, David P., 3,734,714.

Miller, Everett R.: *See—*
Davis, Carlton J., Sr.; Wood, Richard P.; and Miller, Everett R., 3,734,814.

Miller, Herman, Inc.: *See—*
Propst, Robert L.; and Kelley, James O., 3,734,526.

Miller, Howard F., to Aerojet-General Corporation. Stacker crane control system. 3,734,310, Cl. 214-16.40a.

Miller, Larry W.: *See—*
Rabb, Joseph C.; and Miller, Larry W., 3,733,795.

Miller, Lewis S., to Weyerhaeuser Company. Coating compositions and processes. 3,734,764, Cl. 110-93.310.

Miller, Robert C.; and Stoddard, Gordon E. Friction control device. 3,733,753, Cl. 51-34.00e.

Miller, Russell A. Hitch arrangement for front mounted agricultural implement. 3,734,200, Cl. 172-298.000.

Millhaven Fibres Limited: *See—*
Whitfield, Fred Sparks, 3,734,035.

Milligan, Terry W., to Polaroid Corporation. Photographic products and processes. 3,734,727, Cl. 96-29.00d.

Milly, George H., to Geomet Mining and Exploration Company, mesne. Method of prospecting for hydrocarbons. 3,734,489, Cl. 73-23.000.

Milprint, Inc.: *See—*
Dooley, David Francis, 3,734,394.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. N-amino-3,4-dimethyl-6-isobutylphthalimides. 3,734,925, Cl. 260-326.00n.

Minnesota Mining Manufacturing Company: *See—*
Ulseth, John W., 3,734,424.

Mino, Masayuki: *See—*
Kobayashi, Tatsuo; and Mino, Masayuki, 3,733,991.

Minolta Camera Kabushiki Kaisha: *See—*
Hayashi, Toshio; Maeda, Keisuke; and Ohta, Yoshiharu, 3,733,986.
Kobayashi, Tatsuo; and Mino, Masayuki, 3,733,991.
Matsuda, Motonobu, 3,734,632.
Yamanaka, Akira, 3,733,987.
Yata, Kotaro, 3,733,984.

Misawa, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Gripper device for industrial robots or the like. 3,734,556, Cl. 294-88.000.

Miskel, John J., Jr.: *See—*
Lipowski, Stanley A.; and Miskel, John J., Jr., 3,734,889.

Mitchell, David B. Upholstery nail. 3,733,658, Cl. 24-152.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Oda, Minoru, 3,735,152.

Miyake, Toshio; and Suzuki, Yukio, to Hayashibara Company. Process for the separation and purification of riboflavinyl glycosides. 3,734,828, Cl. 195-28.00r.

Miyashita, Hirotoshi; Nishimura, Tomio; and Tomono, Sumiharu. Para-magnetic hard alloys. 3,733,667, Cl. 29-182.700.

Miyazaki, Tetsuya: *See—*
Ueno, Ryuzo; Miyazaki, Tetsuya; Matsuda, Toshio; and Arai, Shinichiro, 3,734,748.

Mizote, Masanori, to Nissan Motor Company Limited. Electronic control device for automatic power transmission. 3,733,930, Cl. 74-866.000.

Mizushina, Yoichi: *See—*

Ieda, Motoi; Mizushina, Yoichi; and Shimazaki, Masaru, 3,735,008.

Mladek, Milos: *See—*
Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, 3,734,583.

Mobil Oil Corporation: *See—*
Heiba, El Ahmadi I.; and Dessau, Ralph M., 3,734,865.
Schwab, Frederick C., 3,734,978.

Mobility Systems, Inc.: *See—*
Comer, Donald T., 3,734,229.

Mobley, Carroll E.: *See—*
Hackman, Lloyd E.; and Mobley, Carroll E., 3,734,762.

Modern Telephones Limited: *See—*
Mardas, Alexis, 3,735,050.

Modine Manufacturing Company: *See—*
Bellovary, Louis; and Popma, Al O., 3,734,177.
Mosier, James A., 3,734,135.

Mohawk Data Sciences Corporation: *See—*
Coccagna, Edmund G., 3,735,372.

Moiso, Ugo; and Papa, Sisto, to Aziende Colori Nazionali Affini Acna S.p.A. Liquid petroleum hydrocarbons containing azo dyes. 3,734,857, Cl. 252-51.50r.

Molnau, Erwin P.; deceased (by Molnau, Margaret L.; administratrix). Sugar beet harvester. 3,734,193, Cl. 171-57.000.

Molnau, Margaret L.: *See—*
Molnau, Erwin P., 3,734,193.

Mondok, Frank: *See—*
Duron, Paul P.; Carter, Thomas A., Jr.; and Mondok, Frank, 3,733,848.

Monotype Corporation Limited, The: *See—*
England, Charles John, 3,733,979.

Monroe, William E., to Bendix Corporation, The. Dual ratio force transfer apparatus. 3,733,822, Cl. 60-54.50r.

Monsanto Company: *See—*
Campbell, Willis H., 3,734,695.
Ludwig, Maier, 3,734,954.

Montecatini Edison S.p.A.: *See—*
Bertoni, Luigi; Pizzamiglio, Giancarlo; Fava, Renato; and Cimarosti, Giordano, 3,734,848.

Montgomery, Harold S.; and Stevens, Alan F., to Nutting, David J. and said Stevens assor. to Nutting, Phyllis M., mesne. Automated information transmitting apparatus. 3,733,717, Cl. 35-9.00a.

Montgomery, James William; and Reifel, Michael D., to Tenneco Oil Company. Method for locating the position of members relative to each other. 3,735,129, Cl. 250-65.000.

Montgomery, Lionel C.: *See—*
Mandorf, Victor, Jr.; and Montgomery, Lionel C., 3,734,997.

Montjourides, Pierre, to Societe Anonyme D.B.A. Hydraulic brake automatic adjuster. 3,734,246, Cl. 188-196.00a.

Moody, Robert E.; and Wilson, David A., to Hewlett-Packard Company. Spectrophotometer utilizing memory storage calibration techniques. 3,734,621, Cl. 356-95.000.

Morewood, William Henry. Self-feeding device for handicapped persons. 3,734,306, Cl. 214-1.00t.

Morgan, Dean T., to Thermo Electron Corporation. Vapor generator. 3,734,402, Cl. 236-21.00b.

Morgan, Grant T. Photographic type-composing machines. 3,733,977, Cl. 95-4.50r.

Morgan, Wendell D., to Feeders Corporation. Height adjustment means. 3,734,589, Cl. 312-351.000.

Morgan, William A., to Brown & Root, Inc. Method for connecting pipelines. 3,733,676, Cl. 29-407.000.

Mori, Akihiko: *See—*
Yasui, Yukio; Ikoga, Wataru; Mori, Akihiko; and Adachi, Tadaaki, 3,734,746.

Mori, Iwao, to Sony Corporation. Plural-microscope with light indicator. 3,734,593, Cl. 350-31.000.

Morimoto, Tadashi: *See—*
Murayama, Yoshinobu; Morimoto, Tadashi; Kinoshita, Mikio; and Yamanishi, Isamu, 3,733,912.

Morine, Richard L.; and Hokes, James J., to Tedco, Inc. Direct transfer seeder. 3,734,356, Cl. 222-199.000.

Morishita, Harumi: *See—*
Sakato, Yajiro; Ina, Kazuo; Yamamoto, Yukitsune; and Morishita, Harumi, 3,734,932.

Moritz, Konrad Gustav, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Arrangement for transmitting heat. 3,734,173, Cl. 165-105.000.

Moriya, Hisanori; and Hosho, Yukio, to Hitachi, Ltd. Air valve type carburetor. 3,734,473, Cl. 261-44.00r.

Morozumi, Yoshimi. Automatic stop lamp device of a car. 3,735,345, Cl. 340-62.000.

Morris, Philip, Incorporated: *See—*
Buchanan, William Michaux; and Madures, John W., 3,734,104.

Morrison, Charles R., to Truck-Lite Co., Inc. Rail mounted sidemarker and clearance light. 3,735,116, Cl. 240-8.200.

Morse, Lewis D.; and Hammes, Paul A., to Merck & Co., Inc. Stabilized beverages. 3,734,742, Cl. 99-28.000.

Moseley, John C.: *See—*
Schaffer, Rupert E.; Moseley, John C.; and Sharrod, Derrick, 3,734,799.

Moser, Andreas: *See—*
Drangeid, Karsten E.; and Moser, Andreas, 3,735,390.

Moser, Werner: *See—*
Mutz, Gerhard; Hettich, Bernhard; and Moser, Werner, 3,735,095.

Mosher, Richard K., to Kimball Products Company, Inc. Portable radar system. 3,735,402, Cl. 343-14.000.

Mosier, James A., to Modine Manufacturing Company. Heat exchanger with internal turbulator. 3,734,135, Cl. 138-38.000.

Motor Wheel Corporation: *See—*
Hubbard, Harold C., 3,734,245.

Motorcycle dynamometer: *See—*
Dahl, Christian W.; and Hartzell Corporation, 3,733,894.

Motorola, Inc.: *See—*
Bryan, Anthony G., 3,735,057.
Dattilo, Donald J., 3,734,373.
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,735,240.
Frederiksen, Thomas M.; and Russell, Ronald W., 3,735,151.
Irving, Donald E., 3,734,606.
Kowalski, Walter; Park, Franklin; and Schmidt, Jude P., 3,735,035.
Price, James B.; and Roman, William C., 3,734,770.
Saddler, Ivan R., 3,735,209.
Spanjer, Keith G., 3,734,382.
Tomsa, Stanley J., 3,735,048.

Moy, Bertram K.; Mac Kenzie, Gerald L.; and Pisacane, Frank J., to United States of America, Navy. Gas generating solid containing 5-aminotetrazole nitrate. 3,734,789, Cl. 149-19.000.

MPC/KurgiSil: *See—*
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., 3,734,100.

Mueller, Arthur Thomas, to Gulf & Western Industrial Products Company. Feed mechanism. 3,734,265, Cl. 198-24.000.

Mueller Co.: *See—*
Finney, Robert R.; Luckenbill, Lawrence F.; and Kissell, Gerry E., 3,734,112.

Muhn, Robert A.: *See—*
Davies, Gilbert E.; Loubier, Robert J.; Weston, John M.; and Muhn, Robert A., 3,734,660.

Mulasmajic, Dzemal. Anti-friction magnetic wheel. 3,734,565, Cl. 301-5.00r.

Mulkens, Casper Antonius Henricus: *See—*
Van Der Peet, Cornelis Johannes; and Ruiterkamp, Willem, 3,735,013.

Muller, Helmut; Rosenberger, Siegfrid; and Brunetti, Heimo, to Ciba-Geigy Corporation. Stabilising homo- or copolymeric polyolefins with diacyl dihydrazides. 3,734,885, Cl. 260-45.85b.

Munn, Ben. Part feeding attachment for fastener driving tools. 3,734,377, Cl. 227-120.000.

Murase, Shigeo; and Majima, Mituhiro, to Matsushita Electric Industrial Co., Ltd. Liquid fuel burner. 3,734,677, Cl. 431-88.000.

Murata, Kazuaki: *See—*
Funabashi, Tadao; and Murata, Kazuaki, 3,735,329.

Murayama, Yoshinobu; Morimoto, Tadashi; Kinoshita, Mikio; and Yamanishi, Isamu, to Kubotatekko Kabushikigaisha. Transmission for farm tractor. 3,733,912, Cl. 74-15.400.

Murdough, Charles P.; and Neely, Alfred W., to American Hospital Supply Corporation. Heat-retaining food server. 3,734,077, Cl. 126-246.000.

Murle, Kurt, to Forster, Bernhard, Firma. Self-winding mechanism for watches. 3,733,806, Cl. 58-82.00r.

Murry, Edward J. Method and apparatus for translating ultrasonic energy. 3,735,159, Cl. 310-8.300.

Mushines, Anthony. System for converting heat to kinetic energy. 3,733,819, Cl. 60-108.000.

Muterel, Roland, to Societe Anonyme D.B.A. Master cylinder for hydraulic clutch control system. 3,733,823, Cl. 60-54.60r.

Mutt, Viktor: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,734,946.

Mutz, Gerhard; Hettich, Bernhard; and Moser, Werner, to Kienzle Apparate G.m.b.H. Card routing apparatus. 3,735,095, Cl. 235-61.90r.

Myers, Harry L.: *See—*
Holt, Lloyd J.; Myers, Harry L.; and Zurn, Gordon F., Jr., 3,734,429.

Myers, William P.: *See—*
Cramer, Robert L.; Henneman, John W.; and Myers, William P., 3,734,078.

Myles Digital Sciences, Inc.: *See—*
Abrams, Harold B.; Haynes, Benjamin O.; and Williams, Glynn P., 3,735,366.

Naccarato, James E.; and Farkas, David R. Ventilation device. 3,733,996, Cl. 98-2.120.

Nagai, Hiroshi; Shirohama, Masatoshi; Matsumoto, Kenichi; and Kamimura, Haruo, to Nippon Kokan Kabushiki Kaisha. Method of ejecting plug for rolling mill and an apparatus therefor. 3,733,871, Cl. 72-209.000.

Nagel, Harry Henry, to Bell Telephone Laboratories, Incorporated. Three terminal fuse-resistor device. 3,735,312, Cl. 337-164.000.

Nagy, Arthur E.: *See—*
Balser, Martin; Nagy, Arthur E.; and Proudian, Andrew P., 3,735,333.

Nagy, Charles E.; and Nagy, John F. Tamper proof door butt hinge assembly. 3,733,649, Cl. 16-137.000.

Nagy, John F.: *See—*
Nagy, Charles E.; and Nagy, John F., 3,733,649.

Naka, Katsushi, to Ise Electronics Corporation. Pattern display apparatus. 3,735,388, Cl. 340-324.0ad.

Naka, Katushi, to Ise Electronics Corporation. Display apparatus utilizing cathode ray tubes. 3,735,383, Cl. 340-324.00a.

Nakamura, Hideo; Takasugi, Kazuo; Hiroshima, Minoru; and Inose, Fumiyuki, to Hitachi, Ltd. Data exchange system. 3,735,365, Cl. 340-172.500.

Nakamura, Hisashi; and Tanaka, Masatoshi, to Sumitomo Metal Industries Limited. Cross-rifled vapor generating tube. 3,734,140, Cl. 138-177.000.

Nakata, Tadashi: *See—*
Tahara, Akira; Ohtsuka, Yasuo; Nakata, Tadashi; and Takada, Shoichi, 3,734,966.

Nalco Chemical Company: *See—*
Anderson, Donald R.; and Frisque, Alvin J., 3,734,873.

Napoli, Louis Sebastian, to RCA Corporation. Balanced mixer. 3,735,267, Cl. 325-446.000.

Nash, John E.; and Grennan, Charles W., to Chandler Evans Inc. Pump operated cooling system using cold fuel. 3,733,816, Cl. 60-39.28r.

Natho, Paul J.; and Vicari, Felix J., to ACF Industries Incorporated. Safety device for a fluid cylinder valve actuator. 3,734,455, Cl. 251-62.000.

National Cash Register Company, The: *See—*
Churchill, Donald; and Cartmell, James V., 3,734,597.
Huggins, Orville C., 3,734,012.
Touchman, William S.; and Hays, John D., 3,735,165.

National Lead Company: *See—*
Becker, John V.; and Bellinger, Arthur A., 3,734,761.

National Research Development Corporation: *See—*
Cheng, David Chung-Hsun; and Davis, John Brian, 3,734,468.

National Rubber Company, Limited: *See—*
McKenzie, Ross A., 3,734,557.

National Wire Industries, Inc.: *See—*
Kovacik, Joseph, 3,734,032.

Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Reznitsky, Kommunarsk; and Pilipchuk, Viktor Romanovich. Ingot extracting device. 3,734,165, Cl. 164-274.000.

Naylor, Floyd E.; and Farrar, Ralph C., to Phillips Petroleum Company. Multifunctional initiators. 3,734,972, Cl. 260-665.00r.

Nazyrov, Ravil Nigametzhanovich; and Kavirov, Rinad Fatkhrakhmanovich. Method of winding helical springs and device for effecting the same. 3,734,146, Cl. 140-71.00r.

Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid: *See—*
Hirs, Gilles Gerardus, 3,734,641.

Neely, Alfred W.: *See—*
Murdough, Charles P.; and Neely, Alfred W., 3,734,077.

Nelson, Herbert T. Photoprint holder and storage container. 3,733,726, Cl. 40-104.170.

Nelson, Jerome W.: *See—*
Paysinger, Joseph R.; Sims, Eugene F.; and Nelson, Jerome W., 3,733,939.

Nelson, Robert B., to Maytag Company, The. Latch mechanism. 3,734,290, Cl. 210-146.000.

Nelson, Robert E., to General Motors Corporation. Thermocouple signal amplifier. 3,735,274, Cl. 330-1.00a.

Nerlich, Gunter, to Dimensional Production Limited. Viewer. 3,734,596, Cl. 350-140.000.

Nesbit, J.-Evans & Company, Limited: *See—*
Croxton, John Mervyn, 3,733,623.

Nesmith, Charles A., Jr. Binder. 3,734,542, Cl. 281-47.000.

Netzel, Philip C.: *See—*
Brandt, Thomas F., Jr.; and Netzel, Philip C., 3,735,065.

Neuman, John G.: *See—*
Agarwal, Paul D.; Johnston, Richard W.; and Neuman, John G., 3,735,207.

Neuzil, Richard W., to Universal Oil Products Company. Hydrocarbon separation process. 3,734,974, Cl. 260-674.0sa.

New York Toy Corporation: *See—*
Rubin, Herbert, 3,734,496.

New Zealand Dairy Research Institute: *See—*
Robertson, Peter Struan; Bysouth, Raymond; and New Zealand Dairy Research Institute, 3,733,702.

Newburgh, Ronald G., to United States of America, Air Force. Method utilizing brewster angle for determining angular velocity and light beam incidence angles. 3,734,619, Cl. 356-27.000.

Newlin, Frank Allen, III: *See—*
Maholick, Andrew Walter; Newlin, Frank Allen, III; Snyder, Ramon Eugene; and Stager, Stanley Ray, III, 3,735,357.

Newman, Howard; and Fields, Thomas Lynn, to American Cyanamid Company. 5'-Substituted griseofulvins. 3,734,931, Cl. 260-346.20g.

Ng, Wahling H.: *See—*
Young, John P.; and Ng, Wahling H., 3,734,792.

Nichols Engineering & Research Corporation: *See—*
Lado, Ernest Andres, 3,734,755.

Nicholson, Morris R. Firearm with removable locking system. 3,733,731, Cl. 42-69.00a.

Nickell, Grason T.: *See—*
Hungate, Ernest C.; Ogletree, Harold A.; and Nickell, Grason T., 3,733,778.

Niederprum, Hans; and Voss, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of hydroxyalkylperfluoroalkane sulfonamides. 3,734,962, Cl. 260-556.00f.

Nielson, Jay P. Mechanical heart system. 3,734,648, Cl. 417-310.000.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
Ohashi, Shigeo, 3,735,077.

Nikles, Francois; and Besson, Rene, to Centre Electronique Horloger SA. Pawl and ratchet device. 3,733,917, Cl. 74-144.000.

Nilsson, John Martin; and Palicka, Jadwiga, to Aktiebolaget Bofors. Process for the preparation of diphenic acid and 2-phenyl benzoic acid. 3,734,956, Cl. 260-515.00p.

Nippon Electric Company, Limited: *See—*
Hatta, Hiroshi; and Ishii, Yoshiteru, 3,735,364.
Kobayakawa, Masaki; and Yoshii, Takashi, 3,735,181.
Tuchiya, Kiyoshi, 3,735,149.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hirano, Katsuhiko, 3,735,012.
Iijima, Masakatsu, 3,735,076.

Nippon Kogaku K.K.: *See—*
Shimizu, Yoshiyuki, 3,734,600.

Nippon Kokan Kabushiki: *See—*
Michishita, Katsumi; Okami, Yuji; and Emura, Tokumatsu, 3,734,628.

Nippon Kokan Kabushiki Kaisha: *See—*
Arimura, Tohru; Okado, Masaru; Fukuma, Yuji; and Ido, Yoshimitsu, 3,733,866.
Nagai, Hiroshi; Shirohama, Masatoshi; Matsumoto, Kenichi; and Kamimura, Haruo, 3,733,871.

Nippon Petrochemicals Co., Ltd.: *See—*
Yazawa, Masahide, 3,734,812.

Nirasawa, Tomiji. Speed heading and/or time signal generating system for a ship. 3,735,397, Cl. 343-5.0st.

Nishibori, Yoshihiro: *See—*
Tanaka, Jun; Taguchi, Toshihiko; and Nishibori, Yoshihiro, 3,733,687.

Nishimura, Tomio: *See—*
Miyashita, Hirotoshi; Nishimura, Tomio; and Tomono, Sumiharu, 3,733,667.

Nissan Motor Company Limited: *See—*
Mizote, Masanori, 3,733,930.

Nist, Donald E.; and Quartz, Jay H., to Whittaker Corporation. Seat and leg operated load lifting device. 3,734,495, Cl. 272-58.000.

Nix, William R. Method and apparatus for cutting openings in paneling or the like. 3,733,707, Cl. 33-180.00r.

Noack, Eolf; Kromer, Karl; and Hillmann, Paul, to Veb Pentacon Dresden Kamera-und Kinowerke. Photographic focal-plane shutter. 3,733,990, Cl. 95-55.000.

Noel, Eugene M. Muffin perforating machine. 3,733,942, Cl. 83-2.000.

Nomoto, Hiroaki: *See—*
Yamamoto, Hiroshi; Okuda, Kuniteru; and Nomoto, Hiroaki, 3,733,898.

Nord, Eric T.: *See—*
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Nordnero AB: *See—*
Almegard, Svante G.; and Ericson, Harry A. H., 3,734,108.

Nordson Corporation: *See—*
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Nordstrom, Kjell Helge: *See—*
Flinth, Rune Nils Allan; Ahl, Nils Boran; Larsson, Lars Herbert; and Nordstrom, Kjell Helge, 3,734,217.

Nordstrom, Kjell Helge; and Flinth, Rune Nils Allan, to Conrail AB. Weighing device. 3,734,216, Cl. 177-136.000.

Nordt, Egon: *See—*
Bienert, Klaus; Lang, Winfried; and Nordt, Egon, 3,734,817.

Norfin, Inc.: *See—*
Snellman, Donald L., 3,734,577.

Normalair-Garrett (Holdings) Limited: *See—*
Rowe, Alan Charles; and Bennett, John Richardson, 3,734,120.
Rowe, Alan Charles; and Bennett, John Richardson, 3,734,121.

Norman, Michael Eric: *See—*
Harman, Julius; and Norman, Michael Eric, 3,733,940.

Norris, Leon F.: *See—*
Kushnir, Bud W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David J. I., 3,734,713.

North American Rockwell Corporation: *See—*
Flint, Edward F., 3,735,136.
Heinz, David M., 3,735,145.
Levenhagen, Alvin W., 3,734,341.
Wanlass, Frank M., 3,735,277.
Young, John R.; and McElwain, John C., 3,733,854.

Northeast Electronics Corporation: *See—*
Boatwright, John T., 3,735,263.

Northern Electric Company Limited: *See—*
Bonis, David Raynes; and Foster, Eric, 3,735,021.

Northrop Carolina, Inc.: *See—*
Smith, Ashley P., 3,733,659.

Northrop Corporation: *See—*
Rennick, Lyle Vance, 3,733,892.
Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, 3,735,261.

Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Oil recovery with sulfomethylated poly (lower alkyl vinyl ether/maleic anhydride). 3,734,187, Cl. 166-275.000.

Norton Company: *See—*
Eisner, Steve, 3,734,838.

Notaras, Angelo Lambrinos: *See—*
Notaras, John Arthur; and Notaras, Angelo Lambrinos, 3,733,700.

Notaras, John Arthur; and Notaras, Angelo Lambrinos. Dual grip handle for power tools. 3,733,700, Cl. 30-381.000.

Nozawa, Hideo, to Kabushiki Kaisha Daini Seikosha. Watertight watch case. 3,733,807, Cl. 58-90.00r.

Nozawa, Masao: *See—*
Okada, Masao, 3,734,409.

NRM Corporation: *See—*
Cantarutti, Armindo, 3,734,655.

Nudds, Derreck Albert, to N.V. Tools Limited. Apparatus for determining viscosity. 3,734,119, Cl. 137-92.000.

Numsen, Harry P. Fire place air conditioning apparatus. 3,733,842, Cl. 62-259.000.

Nussbaum, Hans-Georg: *See—*
Schroder, Jurgen; Von Osten, Reimer; Nussbaum, Hans-Georg; and Bartels, Ulrich, 3,735,385.

Nussbaum, Hans-Georg; and Von Osten, Reimer, to U.S. Philips Corporation. Circuit arrangement for character display on a television display screen. 3,735,384, Cl. 340-324.0ad.

Nutten, Donald C.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, 3,735,261.

Nutting, David J.: *See—*
Montgomery, Harold S.; and Stevens, Alan F., 3,733,717.

Nutting, Phyllis M., mesne: *See—*
Montgomery, Harold S.; and Stevens, Alan F. (said Stevens assor. to), 3,733,717.

N.V. Hollandse Signaalapparaten: *See—*
Le Comte, Corstiaan, 3,735,110.
Vlietstra, Jan, 3,733,694.

N.V. Machinefabriek L. te Strake: *See—*
Van Mullekom, Hubert Peter, 3,734,141.

N.V. Tools Limited: *See—*
Nudds, Derreck Albert, 3,734,119.

Nyman, Bengt E.; and Becker, Larry T., to Sundstrand Corporation. Hydromechanical transmission. 3,733,931, Cl. 74-868.000.

Nyswander, Rueben E., to United States of America, Navy. Automatic gain control. 3,735,272, Cl. 328-132.000.

Oakes, Andrew A.: *See—*
Lucker, Jerome; Oakes, Andrew A.; and Foster, Thomas H., Jr., 3,734,692.

Oas, David C., to Beloit Corporation. Differential scroll drive. 3,734,399, Cl. 233-7.000.

Obeda, Edward G.; and Parry, Frank, to Branson Instruments Incorporated. Ultrasonic sewing machine. 3,734,805, Cl. 156-580.000.

O'Brien, D. G., Inc.: *See—*
Walker, Edward R., Sr., 3,735,024.

Obszarny, Theodore J., to Guardian Electric Manufacturing Company. Sequence relay. 3,735,296, Cl. 335-165.000.

O'Connell, Richard P.; and Zucker, Edwin, to Xerox Corporation. Microfiche viewer-copier with billing data storage. 3,734,610, Cl. 355-40.000.

Oda, Minoru, to Mitsubishi Denki Kabushiki Kaisha. DC Regenerating systems having current source exhibiting positive resistance and having zero crossing V-I characteristic at a reference potential. 3,735,152, Cl. 307-237.000.

Oda, Osamu, to Dainippon Screen Seizo Kabushiki Kaisha. Inking arrangement in offset proof press for multicolor printing. 3,734,014, Cl. 101-186.000.

Odman, Tor Axel, to Aktiebolaget Tudor. Apparatus for arranging and soldering together electrode sets for lead accumulators. 3,734,167, Cl. 164-324.000.

O'Donnell, Paul E.; and Leaf, H. Vincent, to Ark-Les Switch Corporation. Electrical connector. 3,735,331, Cl. 339-97.00c.

Offerman, Seymour; and Pittman, Robert B., to Industrial Electronic Hardware Corporation. Kinescope anode connector. 3,735,330, Cl. 339-91.00r.

Officine Precisione Luserna S.p.A.: *See—*
Ferraris, Enrico, 3,734,255.

Ogletree, Harold A.: *See—*
Hungate, Ernest C.; Ogletree, Harold A.; and Nickell, Grason T., 3,733,778.

Ohar, Waysl: *See—*
Eshelman, Robert W.; and Ohar, Waysl, 3,734,403.

O'Hara, Jamie. Non-spilling dish for dogs and the like. 3,734,062, Cl. 119-61.000.

Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Illuminated miniature switch. 3,735,077, Cl. 200-167.00a.

Ohishi, Akira: *See—*
Komatsu, Koei; Hayashi, Shigeki; Ohishi, Akira; and Sakai, Mashato, 3,734,898.

Ohnuma, Kiyoshi: *See—*
Uozumi, Sumio; and Ohnuma, Kiyoshi, 3,733,927.

Ohta, Yoshiharu: *See—*
Hayashi, Toshio; Maeda, Keisuke; and Ohta, Yoshiharu, 3,733,986.

Ohtsuka, Yasuo: *See—*
Tahara, Akira; Ohtsuka, Yasuo; Nakata, Tadashi; and Takada, Shoichi, 3,734,966.

Okada, Masao: *See—*
Okada, Masao, 3,734,409.

Okada, Masao, to Okada, Masao and Nozawa, Masao. Steam/water mixing valve. 3,734,409, Cl. 239-99.000.

Okado, Masaru: *See—*
Arimura, Tohru; Okado, Masaru; Fukuma, Yuji; and Ido, Yoshimitsu, 3,733,866.

Okagawa, Chikatsu: *See—*
Kato, Tetsuya; Kidaka, Toshiaki; and Okagawa, Chikatsu, 3,734,986.

Okami, Yuji: *See—*
Michishita, Katsumi; Okami, Yuji; and Emura, Tokumatsu, 3,734,628.

Okuda, Kuniteru: *See—*
Yamamoto, Hiroshi; Okuda, Kuniteru; and Nomoto, Hiroaki, 3,733,898.

Olati, Pier Luigi. Carburetor for internal combustion engines. 3,734,474, Cl. 261-95.000.

Oldfield, Dempsey R.: *See—*
Lynch, Peter D.; Oldfield, Dempsey R.; and Zifka, Donald K., 3,734,324.

Oliver, Jay Thomas: *See—*
Kelly, Peter Bernard; and Oliver, Jay Thomas, 3,734,807.

Olund, Sven A., to Chevron Research Company. Refrigeration, heat pump, and heat engine apparatus. 3,733,850, Cl. 62-468.000.

Olympia Werke AG: *See—*
Hanenkamp, Horst; and Wolken-Mohlmann, Helmut, 3,735,304.

Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, to Squibb, E. R., & Sons, Inc. Serine derivatives. 3,734,946, Cl. 260-471.00c.

Onishi, Yukio. Thermo-switch for temperature control. 3,735,314, Cl. 337-382.000.

Onokhov, Pavel Pavlovich: *See—*
Dolgolenko, Anatoly Alexandrovich; Onokhov, Pavel Pavlovich; Makhover, Jury Meerovich; and Gudovich, Alexandr Markovich, 3,734,271.

Optische Werke G. Rodenstock: *See—*
Wilms, Karl-Heinz, 3,735,125.

Orbeck, Finn: *See—*
Butler, John Francis; Jordan, John William; and Orbeck, Finn, 3,734,074.

O'Riorden, David J., Jr.: *See—*
Rawson, Edward B.; and O'Riorden, David J., Jr., 3,734,082.

Ormiston, Robert B.; and Wilcox, Gale F., to Steelcase Inc. File. 3,734,590, Cl. 312-322.000.

Orth, Edward George: *See—*
Heiple, Danforth Kingsbury; Hillman, Danny Lee; Orth, Edward George; and Stueve, Paul Joseph, 3,734,576.

Orth, Peter. Apparatus for measuring revolution speed of a body. 3,735,262, Cl. 324-174.000.

Osadsky, Paul, to Kawa, Dawn E. Combination broom shovel, and scraper. 3,733,636, Cl. 15-111.000.

Osborne, Fred H.; Tuttle, Robert S.; and Corbett, Michael J., to Wurlitzer Company, The. Tone arm assembly for automatic phonograph. 3,734,512, Cl. 274-23.00r.

Osburn, Carl L., to Phillips Petroleum Company. Burner controlling apparatus and method. 3,734,675, Cl. 431-12.000.

Osdor, Asriel, to Hydro Chemical & Mineral Corporation. Flash evaporation using surface active agent and immiscible liquid. 3,734,160, Cl. 159-47.00r.

Ostensen, Ralph G.: *See—*
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., 3,734,100.

Oster, Stanley: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, 3,735,261.

O'Sullivan, George, to Tenney Engineering, Inc. Poly-phase digital controller. 3,735,241, Cl. 323-22.0sc.

Otis Elevator Company: *See—*
Secresty, Anthony Vincent; and Grabowski, Edward Benedict, 3,734,238.

Ott, Owen J.; and Ginn, David W., to Data Interface Associates, mesne. Magnetic printing system. 3,735,416, Cl. 346-74.0mp.

Otto, George: *See—*
Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,209.
Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,211.

Otto, George E., to Bucyrus-Erie Company. Well drill transfer mechanism. 3,734,208, Cl. 175-52.000.

Ousterhout, Douglas K. Mechanical tongue depressor. 3,734,084, Cl. 128-15.000.

Oval Engineering Co., Ltd.: *See—*
Yamamoto, Hiroshi; Okuda, Kuniteru; and Nomoto, Hiroaki, 3,733,898.

Overmyer Corporation: *See—*
Hollingsworth, Elvin R., 3,734,703.

Owens-Corning Fiberglas Corporation: *See—*
Cohen, Charles I., 3,734,802.

Owens-Illinois, Inc.: *See—*
Fike, Roy Albert, 3,734,704.
Fincham, Frederick D., 3,734,705.
Griffith, Edwin D., 3,734,343.
Guest, Pal R.; and Kontz, Robert F., 3,734,666.
Shields, Dean W., 3,734,152.
Veres, Frank, 3,734,702.

Paabo, Max: *See—*
Ingerstedt, Sven; and Paabo, Max, 3,733,745.

Pace, John G., to Chrysler Corporation. Marine engine cooling. 3,734,170, Cl. 165-51.000.
Package Machinery Company: *See—*
Bosyk, William, 3,734,664.
Packaging Associates, Inc.: *See—*
Polk, Edgwin R., 3,734,154.
Page, Daniel M.: *See—*
Blasch, Earl B.; Klingaman, Richard M.; and Page, Daniel M., 3,734,723.
Page, Robert N.: *See—*
Bender, Herman G.; Page, Robert N.; and Wold, Leslie D., 3,734,099.
Paginton, Philip Norman, to Westinghouse Brake and Signal Company. Fluid pressure operable brake control valves. 3,734,575, Cl. 303-33.000.
Paillard S.A.: *See—*
Ascoli, Enzo, 3,735,199.
Pak, Mikhail Stepanovich: *See—*
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich, 3,734,227.
Pakin, Vadim Nikolaevich. Rectifier. 3,735,197, Cl. 315-348.000.
Palicka, Jadwiga: *See—*
Nilsson, John Martin; and Palicka, Jadwiga, 3,734,956.
Paliyenko, Paul; and Beier, Werner E. Method for extruding T-shaped filaments. 3,734,993, Cl. 264-177.00f.
Pallos, Ferenc M., to Stauffer Chemical Company. Phosphorus containing amidines. 3,734,980, Cl. 260-944.000.
Palmberg, Paul W., to Physical Electronics, Inc. Field termination plate. 3,735,128, Cl. 250-49.50c.
Palmer, Allan M., to Aktiengesellschaft Gebruder Loepfe. Adjustable spindle arm for motion picture projectors. 3,734,422, Cl. 242-197.000.
Palmer, Allan M., to Eastman Kodak Company. Adjustable spindle arm for motion picture projectors. 3,734,427, Cl. 242-197.000.
Palmer, Ansell W., to General Electric Company. Overvoltage surge, arrester for a meter. 3,735,259, Cl. 324-110.000.
Palmer, Charles E.; and Peters, Stanley A., to Palmer Machinery Development Corporation. Carton gluing machine and method. 3,733,980, Cl. 93-49.00m.
Palmer, George W.: *See—*
Herpich, William A.; Park, Glenn S.; and Palmer, George W., 3,734,317.
Palmer Machinery Development Corporation: *See—*
Palmer, Charles E.; and Peters, Stanley A., 3,733,980.
Palmer-Shile Company: *See—*
James, Wayne H., 3,734,315.
Palumbo, Giovanni. Air actuated eye for toys with hollow flexible bodies. 3,733,740, Cl. 46-44.000.
Pan American Enterprises: *See—*
Varrin, Andre J.; and McCarter, William L., 3,734,456.
Panian, Frederick C.: *See—*
Urbanic, John M.; Fox, D. Marshall; and Panian, Frederick C., 3,735,084.
Pankow, Norman N.; and Sloane, Jack. Thermally insulated portable chest. 3,734,336, Cl. 220-21.000.
Papa, Sisto: *See—*
Moiso, Ugo; and Papa, Sisto, 3,734,857.
Papadatos, Dionysios D.; Deibel, Raymond A.; and Riester, William C., to Trico Products Corporation. Concealed windshield wiper system. 3,733,915, Cl. 74-99.000.
Paper Converting Machine Company, Inc.: *See—*
Bradley, John J., 3,733,949.
Pardo, Jorge. Binary precast concrete triangulated building system. 3,733,762, Cl. 52-263.000.
Parenti, Marcantonio: *See—*
Ambrogi, Vittorio; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,734,910.
Parera, Pedro Pere. Device for the articulation of doors. 3,733,749, Cl. 49-193.000.
Park, Franklin: *See—*
Kowalski, Walter; Park, Franklin; and Schmidt, Jude P., 3,735,035.
Park, Glenn S.: *See—*
Herpich, William A.; Park, Glenn S.; and Palmer, George W., 3,734,317.
Park-Ohio Industries, Inc.: *See—*
Kasper, Robert J., 3,735,082.
Seyfried, Richard F.; and Balzer, Norbert R., 3,735,083.
Parks, Christ F.; and Eilers, Louis H., to Dow Chemical Company, The. Plugging of permeable materials. 3,733,833, Cl. 61-36.00r.
Parks, James D. Document feeding mechanism. 3,734,490, Cl. 271-34.000.
Parris, John L., to Carborundum Company, The. Workpiece manipulating apparatus and turning spool therefor. 3,734,305, Cl. 214-1.0qg.
Parry, Frank: *See—*
Obeda, Edward G.; and Parry, Frank, 3,734,805.
Parsons, David V.: *See—*
Watson, Thorpe E.; Parsons, David V.; and Wild, Arthur W., 3,734,785.
Pasedach, Heinrich: *See—*
Hoffmann, Werner; Pasedach, Heinrich; and Pommer, Horst, 3,734,967.
Passal, Frank, to M & T Chemicals Inc. Electrodeposition of nickel. 3,734,840, Cl. 204-49.000.
Pasternack, Francis J. Apparatus for securing and locking freight containers in stacked relationship. 3,734,308, Cl. 214-10.50r.
Pastorel, Robert J.: *See—*
Appleton, Arthur I.; Turner, Duncan; and Pastorel, Robert J., 3,735,078.
Pataky, Gilbert A.: *See—*
Davis, Dennis J.; Kurichh, Sham L.; and Pataky, Gilbert A., 3,734,573.
Patchen, Roy R.: *See—*
Patchen, Thomas N.; and Patchen, Roy R., 3,734,465.
Patchen, Thomas N.; and Patchen, Roy R. Traveling jack assembly. 3,734,465, Cl. 254-84.000.
Patent-Freuhand-Gesellschaft for Elektrische Gluhlampen mbH: *See—*
Liepert, Reinhold, 3,734,678.
Paterson, Alan Hunter; Ewale, Thomas Matthew; and Rogers, John Samuel, to Metal Castings Doehler Limited. Die casting and like apparatus. 3,734,673, Cl. 425-450.000.
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, to Texaco Inc. Carboxylation of indene. 3,734,955, Cl. 260-515.00r.
Patterson, William L., to Adams-Russell Co., Inc. Box enclosure for electrical circuits. 3,734,342, Cl. 220-3.940.
Patton, Tad L., to Esso Research and Engineering Company. Curing of polyurethane prepolymers. 3,734,896, Cl. 260-77.5am.
Paurice, Torindo R., to Lee, Raymond, Organization, Inc., The. Thermal ear wax extracting device. 3,734,093, Cl. 128-184.000.
Pavement Planing Company: *See—*
Reed, Richard F., 3,734,657.
Pawlak, Felix Romain, to U.S. Philips Corporation. Solid-state laser. 3,735,285, Cl. 331-94.500.
Pawlek, Franz: *See—*
Von Starck, Axel; and Pawlek, Franz, 3,734,720.
Payrhammer, Bernd, to Marker, Hannes. Toe iron for safety ski bindings. 3,734,521, Cl. 280-11.35t.
Paysinger, Joseph R.; Sims, Eugene F.; and Nelson, Jerome W., to CRC-Crose International, Inc. Apparatus for forming precision surfaces on ends of large pipes and like work pieces. 3,733,939, Cl. 82-4.00c.
Peabody Galion Corporation: *See—*
Herpich, William A.; Park, Glenn S.; and Palmer, George W., 3,734,317.
Peacey, Wallace E. Mixing board. 3,734,486, Cl. 269-302.100.
Pearl, Donald C.; and Gross, Arthur P., to Canteen Corporation, mesne. Method and apparatus for inhibiting bacterial growth in automatic ice makers. 3,733,840, Cl. 62-78.000.
Pearman, Lawrence. Apparatus for separating products. 3,734,289, Cl. 209-467.000.
Pease, Logan L., to Eaton Corporation, mesne. Communication technique for controlling crane operations. 3,735,352, Cl. 340-147.00r.
Pecoraro, George A.; Mc Cornell, John F.; and Knavish, Leonard A., to PPG Industries, Inc. Method of making float glass. 3,734,701, Cl. 65-27.000.
Peddinghaus, Paul Ferd: *See—*
Klaus, Siegfried, 3,734,485.
Pedinoff, Melvin E., to Hughes Aircraft Company. Colinear heterodyne frequency modulator. 3,735,279, Cl. 331-94.500.
Peek, Theodorus Hendrikus: *See—*
Bouwhuis, Gijsbertus; Haans, Petrus Franciscus Antonius; and Peek, Theodorus Hendrikus, 3,735,281.
Peirano, John F.: *See—*
Peirano, Mary Anne; and Peirano, John F., 3,733,957.
Peirano, Mary Anne; and Peirano, John F. Music teaching device. 3,733,957, Cl. 84-471.000.
Peltier, Lewis G., Jr.: *See—*
Bickford, Harry G.; Kieny, Leonard A., Jr.; and Peltier, Lewis G., Jr., 3,733,893.
Pengilly, Brian W.: *See—*
Aylies, Sargeant E.; Hillhouse, Mial T.; Kyriakis, Alexander; and Pengilly, Brian W., 3,734,866.
Pengo Corporation: *See—*
Benetti, John G.; and Sturgeon, Walter L., 3,734,214.
Pennwalt Corporation: *See—*
Keith, Frederick Walker, Jr.; and Krause, Robert Edward, 3,734,398.
Powell, Harold R., 3,733,847.
Peper, Jan, to U.S. Philips Corporation. Cathode ray tube comprising at least one electron gun for producing a number of electron beams. 3,735,178, Cl. 313-70.000.
Perikov, Richard Fedorovich: *See—*
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich, 3,734,227.
Perilhou, Jean Robert: *See—*
Auphan, Michel Joseph; and Perilhou, Jean Robert, 3,733,899.
Perison, Ronald C., Sr., to Standard Mirror Company, Inc. Rear vision mirror construction. 3,734,447, Cl. 248-481.000.
Perkins, Alan Vincent, to General Electric Company. Blade fastening means. 3,734,646, Cl. 416-220.000.
Perkins, George D.; and Colbert, John R., to Bell & Howell Company. Piezoelectric transducer. 3,735,161, Cl. 310-9.500.
Perl, Richard L., to Tappan Company, The. Gas smooth top range. 3,734,681, Cl. 431-242.000.
Perlewitz, Ralph L.: *See—*

Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,209.
Haisch, Albert C.; Perlewitz, Ralph L.; and Otto, George, 3,734,211.
Perlewitz, Ralph L., to Bucyrus-Erie Company. Well drill and casing drive unit. 3,734,212, Cl. 175-171.000.
Perrier, Dorothy M.; and Benerito, Ruth R., to United States of America, Agriculture. Catalysis of the cellulose-cyclic urea reactions by built-in acid groups. 3,734,685, Cl. 8-129.000.
Perry, Cooper, to Batson-Cook Company. Guide assembly. 3,734,374, Cl. 226-199.000.
Personal Communications, Inc.: *See*—
Yevick, George J., 3,734,605.
Persson, Tage G., to Falls Metal Works, Inc. Sheet metal deburring apparatus. 3,733,962, Cl. 90-24.00f.
Perthen, Johannes: *See*—
Gerighausen, Werner; Heimbrecht, Bernhard; and Perthen, Johannes, 3,735,230.
Pertman, Allan E.: *See*—
Meeker, George W.; and Pertman, Allan E., 3,735,154.
Pesek, Clarence T., to United States of America, National Aeronautics and Space Administration. Circuit board package with wedge shaped corners. 3,735,206, Cl. 317-100.000.
Petcoff, Darrell G., to Sorvall, Ivan, Inc. Apparatus for drying and developing chromatograms. 3,734,693, Cl. 23-253.0pc.
Peter, Rene, to RCA Corporation. Dynamic convergence circuits. 3,735,191, Cl. 315-13.00c.
Peters, Stanley A.: *See*—
Palmer, Charles E.; and Peters, Stanley A., 3,733,980.
Petersson, Ralf Krister Ebbe: *See*—
Holmberg, Roland Bengt; and Petersson, Ralf Krister Ebbe, 3,734,537.
Petterson, Dewitt R.; Assenza, John S.; and Kipp, Henry A. W., to Johnson & Johnson. Blood collecting shut-off valve. 3,734,080, Cl. 128-2.00f.
Pews, R. Garth; and Corson, Fred P., to Dow Chemical Company, The. Synthesis of organic sulfonyl cyanides. 3,734,960, Cl. 260-545.00r.
Pfeiffer, Kurt; Dietrich, Johannes; Schonberg, Karl-Heinz; and Beckmann, Gunter, to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of dry thermoplastic synthetic resin powders from liquefied gas suspensions. 3,734,400, Cl. 233-11.000.
Pfenning, Hans, to Bach & Co. Relay, especially miniature relay. 3,735,297, Cl. 335-203.000.
Phelps, Jerry Allan, Sr. Equipment for measuring and displaying the time lapse between a given heartbeat and the corresponding arterial pulse. 3,734,086, Cl. 128-2.06r.
Philadelphia Quartz Company: *See*—
Pierce, Richard H., 3,734,756.
Philco-Ford Corporation: *See*—
Proctor, Robert H.; and Kombol, Ralph J., 3,734,296.
Phillips, Lawrence: *See*—
Hightower, John D.; Conboy, Martin E.; and Phillips, Lawrence, 3,734,058.
Phillips, Leonard R., to Sterling Radiator Company, Inc. Adjustable damper valve. 3,734,114, Cl. 137-68.000.
Phillips Petroleum Company: *See*—
Dollinger, Robert E., 3,734,999.
Dunn, Howard E., 3,734,975.
Farrar, Ralph C., 3,734,973.
Fodor, Lawrence M., 3,734,899.
Kaufman, Carl Christopher, 3,735,377.
McClintock, William A., 3,734,111.
Naylor, Floyd E.; and Farrar, Ralph C., 3,734,972.
Osburn, Carl L., 3,734,675.
Wiley, Bruce F., 3,734,233.
Phillips, T. H., to United States of America, Navy. Digital frequency discriminator. 3,735,324, Cl. 328-133.000.
Phlipot, Georges Achille: *See*—
Bredoux, Francois Jean-Marie; Mercier, Claude Andre; and Phlipot, Georges Achille, 3,735,135.
Physical Electronics, Inc.: *See*—
Palmberg, Paul W., 3,735,128.
Piccolo, Luigi: *See*—
Calcagno, Benedetto; and Piccolo, Luigi, 3,735,000.
Pickett, John E. P.: *See*—
Kinney, Thomas D.; and Pickett, John E. P., 3,733,950.
Pickett, John E. P. Self aligning base clamp and holder for disposable blade and water bath for microtomes and method. 3,733,948, Cl. 83-98.000.
Pierce, Donald L.: *See*—
Kendall, Frank T.; Pierce, Donald L.; and Weikel, Walter J., 3,735,093.
Pierce, Ernest E. Door construction. 3,734,161, Cl. 160-133.000.
Pierce, Leo A., to Torit Corporation, The. Filtering apparatus. 3,733,790, Cl. 55-324.000.
Pierce, Richard H., to Philadelphia Quartz Company. Finely divided alkali metal silicate glass. 3,734,756, Cl. 106-74.000.
Piester, Loyd W., to PPG Industries, Inc. Process for the production of hydrazoic acid. 3,734,998, Cl. 423-406.000.
Pilipchuk, Viktor Romanovich: *See*—
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Reznitsky, Kommunarsk; and Pilipchuk, Viktor Romanovich, 3,734,165.
Pines, Seemon H.: *See*—
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,734,937.
Pioneer Electronic Corporation: *See*—
Fujie, Seijiro; and Saeki, Yoshifumi, 3,735,203.
Pipa, William J., to Dicker International, Inc. Child's musical toy. 3,733,741, Cl. 46-175.0ar.
Piper, Colin B.: *See*—
Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., 3,734,983.
Pisacane, Frank J.: *See*—
Moy, Bertram K.; Mac Kenzie, Gerald L.; and Pisacane, Frank J., 3,734,789.
Pischinger, Ernest; Bursa, Stanislaw; Koneczny, Henryk; and Straszko, Jerzy. Process for the production of chlorine, sodium bicarbonate and ammonium-sodium nitrate. 3,734,709, Cl. 71-59.000.
Piscitelli, Vincent Americo, to General Electric Company. Split sleeve bearing with integral seals. 3,734,580, Cl. 308-36.300.
Pissiotas, Georg: *See*—
Lukaszczyk, Alfons; and Pissiotas, Georg, 3,734,710.
Pisterzi, Michael J.: *See*—
Ashany, Pon; Audreisch, Leo M., Jr.; and Pisterzi, Michael J., 3,735,362.
Pitt, Harold M., to Stauffer Chemical Company. Manufacture of thiophenol. 3,734,969, Cl. 260-609.00d.
Pittman, Robert B.: *See*—
Offerman, Seymour; and Pittman, Robert B., 3,735,330.
Pittner, John R., to Westinghouse Electric Corporation. Constant torque and inertia control for armature current regulated DC motor with field weakening. 3,735,226, Cl. 318-338.000.
Pitts, James W.: *See*—
Culpepper, George O., Jr.; and Wyss, Clement R., 3,734,774.
Pizzamiglio, Giancarlo: *See*—
Bertoni, Luigi; Pizzamiglio, Giancarlo; Fava, Renato; and Cimarosti, Giordano, 3,734,848.
Plasti-fiber formulations, Inc.: *See*—
Botz, Roland, 3,734,766.
Plastics, Inc.: *See*—
Bateman, Robert F., 3,734,309.
Platt, John G.; and Isaacs, Robert O., to Flex-O-Lators, Inc. Spring deck and insulator for furniture. 3,733,625, Cl. 5-354.000.
Plessey Handel und Investments A.G.: *See*—
Harms, David Christopher, 3,735,051.
Plevyak, Joseph B. Self-driven turret lathe rotating tool attachment. 3,733,662, Cl. 29-57.000.
Plotts, Vernon Charles: *See*—
Loeffler, Romain Eugene; and Plotts, Vernon Charles, 3,733,677.
Plueddemann, Edwin P., to Dow Corning Corporation. Cationic unsaturated amine-functional silane coupling agents. 3,734,763, Cl. 117-72.000.
Pluscec, Josip: *See*—
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,734,946.
Pneu-Veyor, Inc.: *See*—
Vingas, George J., 3,734,569.
Pneumo Dynamics Corporation: *See*—
Spriggs, Frank A., 3,733,665.
Pohl, Gerhard. High frequency-weldable material. 3,734,813, Cl. 161-148.000.
Pokhodnya, Igor Konstantinovich; and Golovko, Vladimir Nikolaevich, to Institut Elektrosvarki imeni E.O. Patona Akademii Nauk Ukrainskoi SSR. Flux cored tubular electrode for gas shielded electric-arc welding. 3,735,090, Cl. 219-146.000.
Polaroid Corporation: *See*—
Borror, Alan L., 3,734,739.
Bruneau, Louis O., 3,733,679.
Milligan, Terry W., 3,734,727.
Sharp, John R., 3,734,737.
Poliak, Richard M., to International Business Machines Corporation. Surfactant-containing soldering fluxes. 3,734,791, Cl. 148-23.000.
Polk, Edgwin R., to Packaging Associates, Inc. Disposable bag with self-closing valve. 3,734,154, Cl. 150-9.000.
Polymer Processing Research Institute Ltd.: *See*—
Yazawa, Masahide, 3,734,812.
Polyvend, Inc.: *See*—
Yingst, Thomas O., 3,734,346.
Pomerantz, Daniel I., to Mallory, P. R., & Co. Inc. Control means regulating a supply of liquids. 3,734,123, Cl. 137-392.000.
Pommer, Horst: *See*—
Hoffmann, Werner; Pasedach, Heinrich; and Pommer, Horst, 3,734,967.
Pool, Stuart D., to Mathews, Bernard C. Drive for orbiting sieve of combine. 3,734,102, Cl. 130-26.000.
Poot, Albert Lucien; Van Besauw, Jan Frans; and Ghys, Theofiel Hubert, to Agfa-Gevaert N.V. Positive working photo-thermographic materials containing bi-imidazolyl compounds and reducing agents and the use thereof in color development. 3,734,733, Cl. 96-480hd.
Popelar, Vladimir; and Ryc, Oldrich, to Tatra, narodni podnik. Vehicle suspensions. 3,734,530, Cl. 280-81.500.
Popma, Al O.: *See*—
Bellovary, Louis; and Popma, Al O., 3,734,177.
Poppe, Dag; and Mathiesen, Odd, to International Standard Electric Corporation. Direction finder gain calibration updating system. 3,735,410, Cl. 343-114.000.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See*—

Porsche, Ferdinand Alexander, 3,735,114.
Porsche, Ferdinand Alexander, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Headlights for vehicles. 3,735,114, Cl. 240-7.100.
Port, Max Alth. Single-coil linear motors. 3,735,162, Cl. 310-13.000.
Port of New York Authority, The: *See—*
Veres, Raymond M., 3,733,818.
Portco Corporation: *See—*
Stout, William A., 3,734,545.
Portec, Inc.: *See—*
Anderson, Robert L.; and Fromm, Marvin M., 3,735,168.
Porter, David H.; Kemmerer, Wayne; and Bray, Douglas, to Thomas Industries Inc. Foldable chandelier. 3,735,123, Cl. 240-78.00f.
Porter, Lawrence C., to Upjohn Company, The. Apparatus for forming urethane foam stock. 3,734,668, Cl. 425-300.000.
Poster, Marvin B. Basting material injection system. 3,734,001, Cl. 99-532.000.
Poston, Mary F. Bone decalcification composition. 3,735,002, Cl. 424-3.000.
Postupack, Dennis S., to PPG Industries, Inc. Transparent electroconductive window and electroconductive solder therefor. 3,734,698, Cl. 29-191.000.
Poulain, Claude: *See—*
Bravi, Jean-Claude; Poulain, Claude; and Viallet, Claude, 3,734,845.
Powanda, Thomas M., to Celanese Corporation. Process to produce oilness alkyds. 3,734,890, Cl. 260-75.00r.
Powell, Harold R., to Pennwalt Corporation. Direct contact halocarbon freezant apparatus. 3,733,847, Cl. 62-375.000.
Powers, Richard E., to Powers Wire Products Co., Inc. Air biased magazine lock and guideway closure for fastener driving tools. 3,734,379, Cl. 227-127.000.
Powers Wire Products Co., Inc.: *See—*
Powers, Richard E., 3,734,379.
PPG Industries, Inc.: *See—*
Farabaugh, Aloysius W., 3,733,704.
Fraley, Richard W., 3,734,945.
Pecoraro, George A.; Mc Cornell, John F.; and Knavish, Leonard A., 3,734,701.
Piester, Loyd W., 3,734,998.
Postupack, Dennis S., 3,734,698.
Prat-Daniel-Poelman: *See—*
Rebours, Albert, 3,733,789.
President Shizuoka University: *See—*
Ishida, Kenjiro, 3,733,895.
Price, James B.; and Roman, William C., to Motorola, Inc. Nitrogen nucleation process for the chemical vapor deposition of polycrystalline silicon from $SiCl_4$. 3,734,770, Cl. 117-217.000.
Price, Wayne E.; and Waldrup, William L. Spare tire lift and holder for a pickup truck and the like. 3,734,323, Cl. 214-451.000.
Prickett, Robert J.: *See—*
Archer, Donald H.; and Prickett, Robert J., 3,735,256.
Prill, Christian: *See—*
Ahrens, Erhard; Prill, Christian; and Wendorff, Hans H., 3,735,334.
Pritchard, Dalton Harold; and Sepp, Walter Edgar, to RCA Corporation. Television camera system with a sinusoidally varying indexing signal. 3,735,028, Cl. 178-5.4st.
Probst, Helmut, to Licentia Patent-Verwaltungs G.m.b.H. Ultrasonic delay line having offset boundary surfaces at point where beam strikes surface. 3,735,292, Cl. 333-30.00r.
Procter & Gamble Company, The: *See—*
Amneus, John S.; and Thomas, Malcolm H., 3,734,280.
Gedge, Burton H., III, 3,734,759.
Proctor, Edward S., Jr., to Combustion Engineering Inc. Reference marker for nondestructive inspection techniques. 3,733,889, Cl. 73-67.500.
Proctor, Robert H.; and Kombol, Ralph J., to Philco-Ford Corporation. Refrigerant drier. 3,734,296, Cl. 210-288.000.
Proctor-Silex Incorporated: *See—*
Finberg, Raymond H.; Edelson, Robert B.; and De Sisto, Richard E., 3,733,640.
Produits Findus S.A.: *See—*
Bengtsson, Bengt Lennart; Bosund, Sven Ingmar Walton; and Hylmo, Bertil, 3,734,751.
Progil: *See—*
Makula, Daniel; and Gonthier, Beatrice, 3,734,908.
Prokopec, Miroslav: *See—*
Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, 3,734,583.
Propst, Robert L.; and Kelley, James O., to Miller, Herman, Inc. Cart. 3,734,526, Cl. 280-33.99t.
Proudian, Andrew P.: *See—*
Balser, Martin; Nagy, Arthur E.; and Proudian, Andrew P., 3,735,333.
Prutton Corporation: *See—*
Prutton, Edward A., 3,733,867.
Prutton, Edward A., to Prutton Corporation. Thread rolling machine. 3,733,867, Cl. 72-93.000.
Pryjmak, Bohdan I., to General Motors Corporation. Speed control system for alternating current induction motors. 3,735,222, Cl. 318-227.000.
Psyras, Hippocrates G.: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,780.
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,781.
Bellisto, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,733,779.
Punt, Vernon E.; Van Neil, Charles G.; and Hatzmann, John F., to Xerox Corporation. Facsimile transceiver. 3,735,040, Cl. 178-7.600.
Purrington, Suzanne T.: *See—*
Lory, John S.; and Purrington, Suzanne T., 3,734,793.
Quaker Oats Company, The: *See—*
Brown, Lloyd H.; and Eftax, Daniel S. P., 3,734,936.
Quan, Peter Michael: *See—*
Dodman, David; Laithwaite, Peter; Leyland, Boris Nicholas; and Quan, Peter Michael, 3,734,886.
Quartz, Jay H.: *See—*
Nist, Donald E.; and Quartz, Jay H., 3,734,495.
Quinton, Kenneth Charles: *See—*
Baker, Henry Louis; Quinton, Kenneth Charles; and Smart, Daniel Henry, 3,735,037.
R. I. Patents, Inc.: *See—*
Arnoldy, Roman F., 3,735,087.
Raatz, Eckart, to Licentia Patent-Verwaltungs G.m.b.H. Control device for switching rectifier systems. 3,735,225, Cl. 318-332.000.
Rabb, Joseph C.; and Miller, Larry W., to Heath Farm Equipment Inc. Beet topping and windrowing apparatus and knife orientation means therefor. 3,733,795, Cl. 56-121.450.
Rabinow, Jacob. String-supported phonograph cartridge. 3,734,511, Cl. 274-1.00r.
Radutsky, Grigory Avramovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich, 3,733,774.
Ragland, Ronald D.: *See—*
Warren, Herbert G.; and Ragland, Ronald D., 3,734,182.
Rajisigl, Zdenek: *See—*
Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, 3,734,583.
Ramsauer, Kurt: *See—*
Knapp, Walter; Weinert, Volker; and Ramsauer, Kurt, 3,734,611.
Ramwell, Peter W.: *See—*
Shio, Hideo; and Ramwell, Peter W., 3,735,005.
Randall, Lyman James; and Seward, Thomas P., III, to Corning Glass Works. Thermally darkening photochromic glass. 3,734,754, Cl. 106-47.00r.
Randel, Rikk Harrison. Illuminated electronic doorbell. 3,735,112, Cl. 240-2.00s.
Ransom, Stephen, to British Aircraft Corporation Limited. Aircraft having variable sweep-back wings. 3,734,430, Cl. 244-46.000.
Rapistan Incorporated: *See—*
Thompson, Gerald F.; and Ridenour, Richard R., 3,734,311.
Rappold, Hermann, & Co., GmbH: *See—*
Austermann, Herbert, 3,734,699.
Rastocny, John, to Diro Industries Corporation. Merchandise display device. 3,734,301, Cl. 211-177.000.
Rathusky, Jiri: *See—*
Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, 3,734,583.
Rawson, Edward B.; and O'Riorden, David J., Jr., to Searle Medidata, Inc. Signal processing system for achilles tendon reflex testing. 3,734,082, Cl. 128-2.00n.
Raytheon Company: *See—*
Archer, Donald H.; and Prickett, Robert J., 3,735,256.
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,735,132.
Derby, Palmer P., 3,735,237.
Meyer, Maurice A., 3,735,407.
Sykes, David F., 3,735,403.
Razdan, Raj Kumar; and Handrick, G. Richard, to United States of America, Health, Education, Welfare. Direct synthesis of (-)-trans-Δ^9-tetrahydrocannabinol from olivetol and ( )-trans-Δ^3-carene oxide. 3,734,930, Cl. 260-345.300.
RCA Corporation: *See—*
Avery, Leslie Ronald, 3,735,192.
Brandinger, Jay Jerome, 3,735,033.
Gross, Josef; and Barkow, William Henry, 3,735,299.
Kalish, Israel Haim; and Khajezadeh, Heshmat, 3,735,210.
Kaplan, Gerald Stanley; and Shefer, Joshua, 3,735,335.
Loper, Ronald Lee, 3,735,038.
Napoli, Louis Sebastian, 3,735,267.
Peter, Rene, 3,735,191.
Pritchard, Dalton Harold; and Sepp, Walter Edgar, 3,735,028.
Roswell, Arthur Edward; and Elymer, Gerald Kenneth, 3,735,208.
Tshudy, Donald Richard, 3,734,847.
Woodward, Oakley McDonald, 3,735,413.
Reaction rail pretension method: *See—*
Coho, Owen C.; and General Electric Company, 3,733,669.
Rebold, Jerome I., 1/3 to Bloom, Leonard. Combination travel bag and recharger for portable battery-operated electric appliance. 3,734,282, Cl. 206-17.500.
Rebours, Albert, to Prat-Daniel-Poelman. Gas-liquid contacting apparatus for separating micromists from a carrier gas. 3,733,789, Cl. 55-233.000.
Recognition Devices, Inc.: *See—*
Lester, Robert W., 3,733,861.
Red Devil Engineering, Inc.: *See—*

Hanley, Donald E., 3,734,566.

Reddy, Junuthula N., to Bendix Corporation, The. Fuel injection control system. 3,734,068, Cl. 123-32.0ea.

Redenbarger, Philip D., to Case, J. I., Company. Support means for boom ram. 3,734,320, Cl. 214-138.00r.

Redifon Limited: *See—*
Humphreys, Martin G., 3,735,194.

Redman, Michael J., to Kennecott Copper Corporation. Extraction of metal values from complex ores. 3,734,715, Cl. 75-21.000.

Redmond, William G., to E-System, Inc., mesne. Non-electronic servo actuator. 3,735,228, Cl. 318-564.000.

Reed, James C. Automatic cabinet making tool. 3,734,153, Cl. 144-326.000.

Reed, Richard F., to Pavement Planing Company. Gang form mover. 3,734,657, Cl. 425-62.000.

Reese, Donald H.: *See—*
McCall, Kenneth E.; and Reese, Donald H., 3,735,085.

Reese, Robert L. Apparatus having automatic re-set means, for detecting a fault current. 3,735,248, Cl. 324-51.000.

Reeser, William O., Jr.: *See—*
Kabler, Donald J.; Gang, Robert E.; and Reeser, William O., Jr., 3,735,306.

Reeves, Wilson A.: *See—*
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., 3,734,684.

Regie Nationale des Usines Renault: *See—*
Fourrey, Francois, 3,734,562.

Regie Nationale des Usines Renault et Societe dite des Automobiles Peugeot: *See—*
Claude, Henault, 3,733,829.

Reich, Allen D.: *See—*
Stanley, Marland L.; and Reich, Allen D., 3,733,887.

Reichel, Eckehart: *See—*
Kobald, Walter; and Reichel, Eckehart, 3,734,225.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Becker, Wilhelm, 3,734,965.

Reid, Edward A., Jr.; and Venendaal, Robert G., to Columbia Gas System Service Corporation. Fluid heater. 3,734,065, Cl. 122-250.00r.

Reifel, Michael D.: *See—*
Montgomery, James William; and Reifel, Michael D., 3,735,129.

Reijnierse, Pieter: *See—*
Beun, Matthijs; and Reijnierse, Pieter, 3,735,349.

Reinagel, Frederick G.; and Zumchak, Eugene M., to Venture Technology, Inc. Music synthesizer keyboard circuit. 3,733,955, Cl. 84-1.010.

Reisacher, Josef; Klaue, Hans Joachim; Jacoby, Ewald; and Bergmeier, Dieter, to Aktiengesellschaft Kuhnle, Kopp & Kausch. Exhaust-gas driven turbochargers. 3,734,650, Cl. 417-407.000.

Reiter, Eli; and Hickey, Herbert P., to I.D.L. Co., Inc. Personalized photograph type watch. 3,733,809, Cl. 58-127.000.

Reithmeier, Alton F.; and Fahey, Frank R., to Xerox Corporation. Data transmission system interruption monitor. 3,735,043, Cl. 178-69.00g.

Reitsma, Jogchum: *See—*
Bolt, Durk Jan; and Reitsma, Jogchum, 3,735,107.
Bolt, Durk Jan; and Reitsma, Jogchum, 3,735,108.

Rembault, Michel, to Thomson-CSF. Hologram identification system. 3,735,374, Cl. 340-213.00r.

Remond, Pierre, to Ateliers Diederichs. Weft inserter drive means safety device of a shuttleless loom. 3,734,144, Cl. 139-336.000.

Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, to Bosch, Robert, G.m.b.H. Control circuit for a D.C. motor. 3,735,220, Cl. 318-139.000.

Rennick, Lyle V.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, 3,735,261.

Rennick, Lyle Vance, to Northrop Corporation. Synchronous vibrational analyzer for rotating machinery. 3,733,892, Cl. 73-71.400.

Renskers, John O.; and Jensen, Charles E., to Coilcraft Inc. Header for mounting circuit elements for incorporation in an electric aircoil. 3,735,214, Cl. 317-234.00r.

Rental Equipment Manufacturing Company: *See—*
Zehrung, Claude D., Jr., 3,734,197.

Rentz, Albert W.; Jackson, Lloyd J.; Willard, Robert C.; and Burklund, Vernon D., to United States of America, Navy. Vent and destruct system. 3,734,019, Cl. 102-27.00r.

Research Engineering Company: *See—*
Sheesley, John M., 3,733,914.

Ressorts du Nord S.A.: *See—*
Duchemin, Michel, 3,734,482.

Restaurant Equipment Design Co.: *See—*
Gerson, Samuel L., 3,734,003.

Reuter-Stokes Electronic Components, Inc.: *See—*
Casper, Karl J., 3,735,126.

Rexham Corporation, mesne: *See—*
Cote, Raymond A., 3,734,397.

Reynolds, William B., to Automation Systems, Incorporated. Control for milling machines and the like. 3,733,961, Cl. 90-21.00r.

Reznitsky, Kommunarsk: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Reznitsky, Kommunarsk; and Pilipchuk, Viktor Romanovich, 3,734,165.

Rheem Manufacturing Company: *See—*
Troughton, Thomas D., 3,733,670.

Rhoades, Vaughan W., to Cities Service Oil Company. In-situ gasification of coal utilizing non-hypersensitive explosives. 3,734,180, Cl. 166-259.000.

Rhodes, Arthur Neville; and Blackburn, Denis Edward, to British Aircraft Corporation Limited. Variable-geometry aircraft. 3,734,431, Cl. 244-49.000.

Rhone-Poulenc S.A.: *See—*
Rio, Andre, 3,734,958.

Rhudy, John S.; Fullinwider, James H.; and Ver Steeg, David J., to Marathon Oil Company. Polymer flooding obtained by pulse injection. 3,734,183, Cl. 166-263.000.

Ribbon Technology Corporation: *See—*
Hackman, Lloyd E.; and Mobley, Carroll E., 3,734,762.

Ricaud, Francois J.: *See—*
Blair, George R.; and Ricaud, Francois J., 3,734,837.

Rice, Joseph A., to Textron, Inc. Pneumatically actuated stapling plier. 3,734,378, Cl. 227-124.000.

Richer, Donald R., to Granite State Machine Company, Inc. Note acceptor controlled ticket dispenser. 3,734,261, Cl. 194-4.00f.

Richeson, William E., Jr., to Magnavox Company, The. Level modulator for facsimile transmitter. 3,735,034, Cl. 178-7.100.

Richie, Edward H.: *See—*
Jones, Kenneth W.; and Richie, Edward H., 3,733,727.

Richier: *See—*
Metaillier, Roger, 3,734,531.

Richter, Heinz; and Thiele, Werner, to Loewe-Agsta GmbH. TV horizontal oscillator having a stabilized auxiliary DC output. 3,735,236, Cl. 321-2.000.

Richtzenhain, Hermann: *See—*
El-Chahawi, Moustafa; and Richtzenhain, Hermann, 3,734,957.

Ridenour, Richard R.: *See—*
Thompson, Gerald F.; and Ridenour, Richard R., 3,734,311.

Riede, Gerhard; and Hagstrom, Olov, to Gambro AG. Device for dialysis. 3,734,298, Cl. 210-321.000.

Riester, William C.: *See—*
Papadatos, Dionysios D.; Deibel, Raymond A.; and Riester, William C., 3,733,915.

Rijswijk, Durk Dijkstra; Van Der Hoek, Willem; and Visser, Wim, to U.S. Philips Corporation. Linear motor for the positioning of magnetic heads. 3,735,163, Cl. 310-13.000.

Rikagaku Kenkyusha Saitama-Ken: *See—*
Tahara, Akira; Ohtsuka, Yasuo; Nakata, Tadashi; and Takada, Shoichi, 3,734,966.

Rimbey, Donald H., to Shook, Helen A. Collapsible trailer. 3,734,525, Cl. 280-30.000.

Ringle, Richard Bertrem, to Globe-Union Inc. Battery charger apparatus having multiple modes of operation and automatic switching therebetween. 3,735,233, Cl. 320-24.000.

Rio, Andre, to Rhone-Poulenc S.A. Process for the preparation of diorganochlorophines. 3,734,958, Cl. 260-543.00p.

Ripley, Charles C., to General Electric Company. Nuclear reactor control rod drive with rod position indicating means. 3,734,824, Cl. 176-36.00r.

Ritter, George F., Jr., to Libbey-Owens-Ford Company. Producing bent tempered glass sheets. 3,734,706, Cl. 65-104.000.

Ritter, Gerhard: *See—*
Ritter, Klaus; Ritter, Josef; Ritter, Gerhard; and Hans, Gott, 3,734,383.

Ritter, Josef: *See—*
Ritter, Klaus; Ritter, Josef; Ritter, Gerhard; and Hans, Gott, 3,734,383.

Ritter, Klaus; Ritter, Josef; Ritter, Gerhard; and Hans, Gott, to EVG Entwicklungs- und Verwertungsgesellschaft m.b.H., Firma. Apparatus for manufacturing welded wire mesh by friction welding. 3,734,383, Cl. 228-2.000.

Rivolier, Charles, to Societe Anonyme D.B.A. Steering mechanism for a road vehicle. 3,734,228, Cl. 180-82.00r.

Rivtac Blindnieten, A.G.: *See—*
Klein, Jean-Pierre, 3,733,882.

Rizzi, Joseph D.; and Fagan, Lloyd D., to Intersil Incorporated, mesne. Double junction read only memory and process of manufacture. 3,733,690, Cl. 29-577.000.

RKL Controls, Inc.: *See—*
Little, Robert K.; and Lincoln, Edgar Barry, 3,734,133.

Robert, Ramon Casas, to Mefina S.A. Sewing machine presser foot. 3,734,041, Cl. 112-212.000.

Roberts, Donald Lee; and George, David John, to Control Data Corporation, mesne. Light apparatus for testing surfaces. 3,734,626, Cl. 356-120.000.

Robertson, Peter Struan; Bysouth, Raymond; and New Zealand Dairy Research Institute, to Cheese vats. . 3,733,702, Cl. 99-462.000.

Robertson, William D. Guided cafeteria high chair. 3,734,028, Cl. 104-245.000.

Robinson, Alfred G., to Eastman Kodak Company. Hexahydro-3,3,6,6-tetramethylfuro-(3,2-b)-furan-2, 5-dione and method of its preparation. 3,734,929, Cl. 260-343.000.

Rockaway Corporation: *See—*
McCrea, Joseph, 3,734,334.

Rockland Systems Corporation: *See—*
Jackson, Leland B., 3,735,269.

Rockwell Manufacturing Company: *See—*
Bonner, Joseph A.; and Evans, Howard J., 3,733,904.
Ebsary, Vivan Richard, 3,734,638.
Evans, Howard J.; Lofink, Joseph P.; and Bonner, Joseph A., 3,733,910.

Roddy, Robert L. Roller skate brake for beginners. 3,734,244, Cl. 188-83.000.

Rodrigues, Antonio A. Restraining device for quadrupeds. 3,734,059, Cl. 119-27.000.

Roe, Rene Pierre Victor; Levavasseur, Andre Adolphe Rene; Sureau, Robert Frederic Michel; and Alicot, Marie-Josephe Jeanne, to Ugine Kuhlmann. Process for the preparation of naphthoylenebenzimidazolium dyestuffs. 3,734,905, Cl. 260-247.20a.

Roesner, Bruce B., to General Motors Corporation. Tachometer processing circuit using logic device to generate equal width pulses. 3,735,257, Cl. 324-78.00e.

Roethke, Ernst, to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung. Forward and reverse yarn feeding device for withdrawing and piecing yarn in a spinning apparatus. 3,733,799, Cl. 57-34.00r.

Rogers, John Samuel: *See*—
Paterson, Alan Hunter; Ewale, Thomas Matthew; and Rogers, John Samuel, 3,734,673.

Rogers, Leslie; and Ayres, Ralph C., to Bendix Corporaion, The. Cathode blade for a field emission X-ray tube. 3,735,187, Cl. 313-355.000.

Rohm G.m.b.H.: *See*—
Schroeder, Gunter; and Gaenzler, Wolfgang, 3,734,870.

Roman, William C.: *See*—
Price, James B.; and Roman, William C., 3,734,770.

Romney, Russell H. Apparatus for simulating, producing and transmitting code signals. 3,735,046, Cl. 178-115.000.

Roob, Elwood L., to Eaton Corporation. Coupling with quick release valve. 3,734,258, Cl. 192-88.00b.

Roos, William N., to DeLurik Corporation. Valve seal. 3,734,457, Cl. 251-173.000.

Root, Roland L.; and Eilers, Louis H., to Dow Chemical Company, The. Well cementing and stimulation method. 3,734,188, Cl. 166-292.000.

Roque V., Alfredo. Vehicle tire. 3,734,157, Cl. 152-354.000.

Rork, Gerald D.; Schlachter, Alfred S.; Simon, Frank N.; and Stryk, Robert A., to Honeywell Inc. Ionization smoke detector. 3,735,138, Cl. 250-83.6ft.

Rosen, Samuel R.: *See*—
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Rosenberger, Siegfrid: *See*—
Muller, Helmut; Rosenberger, Siegfrid; and Brunetti, Heimo, 3,734,885.

Rosenbloom, Morris, to Doric Corporation. Drum reconditioning process. 3,734,043, Cl. 113-120.0bb.

Rosenbluth, Murray, to United States of America, Army. Slot fed stub antenna. 3,735,414, Cl. 343-769.000.

Rosensweig, Ronald E., to Ferrofluidics Corporation. Magnetic fluid pneumatic bearings. 3,734,578, Cl. 308-10.000.

Ross, Earl W., to Tatch-A-Cleat Products. Rod conveyor cleats. 3,734,269, Cl. 198-197.000.

Ross, Gerald F., to Sperry Rand Corporation. Actuation of base band short range pre-collison sensor for vehicle safety apparatus. 3,735,398, Cl. 343-7.0ed.

Roswell, Arthur Edward; and Elymer, Gerald Kenneth, to RCA Corporation. Thermal fatigue lead-soldered semiconductor device. 3,735,208, Cl. 317-234.00r.

Roth, Roy E., Company: *See*—
Sieghartner, Leonard J., 3,734,697.

Roth, Willy: *See*—
Varsanyi, Denis; and Roth, Willy, 3,734,909.

Rowe, Alan Charles; and Bennett, John Richardson, to Normalair-Garrett (Holdings) Limited. Control means for fluid flow valves. 3,734,120, Cl. 137-220.000.

Rowe, Alan Charles; and Bennett, John Richardson, to Normalair-Garrett (Holdings) Limited. Fluid flow valves. 3,734,121, Cl. 137-220.000.

Royster Company: *See*—
Seymour, James E., 3,734,707.

Rozema, Arthur L.; Budd, Wilbert H.; and Kelver, William L., to CTS Corporation. Variable resistance control. 3,735,327, Cl. 338-183.000.

Rozentals, Alfreds R., to Heim Universal Corporation. Spherical bearing assembly. 3,733,666, Cl. 29-149.50b.

Rubin, Herbert, to New York Toy Corporation. Stabilized trampoline. 3,734,496, Cl. 272-65.000.

Rubino, Andrew M., to Armours Pharmaceutical Company. Chelates of hydroxy carboxylic acids and methods for preparing the same. 3,734,940, Cl. 260-448.00b.

Rudd, Robert G., to Eastman Kodak Company. Impervious surround for film insert in record case. 3,734,736, Cl. 96-67.000.

Ruiterkamp, Willem: *See*—
Van Der Peet, Cornelis Johannes; and Ruiterkamp, Willem, 3,735,013.

Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., to Nordson Corporation. Method and apparatus for producing a flat fan paint spray pattern. 3,734,406, Cl. 239-8.000.

Rupp, Herbert E., II, to Rupp Industries, Inc. Adjustable eccentric bearing mountings. 3,733,919, Cl. 74-242.160.

Rupp Industries, Inc.: *See*—
Rupp, Herbert E., II, 3,733,919.

Rushmere, John Derek: *See*—
Hoyer, Paul Jean; and Rushmere, John Derek, 3,734,839.

Rusk, Gerald R.; and Koch, Robert E., to Freeman Supply Company, The. Quick change indicia for patterns and the like. 3,734,448, Cl. 249-103.000.

Russell, John Duncan: *See*—
Russell, John Duncan; and Carter, Neil E., 3,734,417.

Russell, John Duncan; and Carter, Neil E., 60% to Russell, John Duncan and 40% to Carter, Neil E. Electric pepper mill. 3,734,417, Cl. 241-168.000.

Russell, Robert C.; and Entler, Richard W., to Liberty Glass Company. Bottle coating. 3,734,765, Cl. 117-94.000.

Russell, Ronald W.: *See*—
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,735,240.
Frederiksen, Thomas M.; and Russell, Ronald W., 3,735,151.

Russell, Theodore B. Stimulator. 3,734,085, Cl. 128-36.000.

Russo, Frank A.: *See*—
Knockeart, Ronald P.; and Russo, Frank A., 3,735,096.

Ruter, Lewis L. Floating buoyant object. 3,733,733, Cl. 43-3.000.

Ryan, William D. Method of laminating continuous material. 3,734,800, Cl. 156-309.000.

Ryc, Oldrich: *See*—
Popelar, Vladimir; and Ryc, Oldrich, 3,734,530.

Rye Limited: *See*—
Kipling, Barry John, 3,734,092.

Ryman Engineering Company: *See*—
Fatula, James J., 3,733,929.

Ryu, Dewey Y.; Lee, Bong Kuk; and Thoma, Richard W., to Squibb, E. R., Sons, Inc. Continuous process for preparing delta-dehydrogenase. 3,734,830, Cl. 195-65.000.

Saab-Scania Aktiebolag: *See*—
Holmgren, Per Harald, 3,735,104.

Saddler, Ivan R., to Motorola, Inc. Semiconductor device package with energy absorbing layer. 3,735,209, Cl. 317-234.00r.

Saeki, Yoshifumi: *See*—
Fujie, Seijiro; and Saeki, Yoshifumi, 3,735,203.

Saito, Makoto, to Tomy Company, Inc. Coaster vehicle and trackway. 3,734,026, Cl. 104-167.000.

Sakai, Ichio: *See*—
Uozumi, Sumio; and Sakai, Ichio, 3,733,932.

Sakai, Mashato: *See*—
Komatsu, Koei; Hayashi, Shigeki; Ohishi, Akira; and Sakai, Mashato, 3,734,898.

Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, to Tokyo Shibaura Electric Co., Ltd. and Ishibawajima-Harima Heavy Industries Co., Ltd. Alarm apparatus for preventing collision of moving bodies. 3,735,401, Cl. 343-11.00r.

Sakato, Yajiro; Ina, Kazuo; Yamamoto, Yukitsune; and Morishita, Harumi. 1-Oxa-8-oxo-2,6,10,10-tetramethyl-spiro-[4,5]-deca-6-ene. 3,734,932, Cl. 260-347.800.

Salmi, Melvin I. Apparatus for aligning the coupling on separate vehicles. 3,734,539, Cl. 280-477.000.

Salomon, Georges Pierre Joseph. Apparatus and method for compensating for the longitudinal movement of a safety ski binding. 3,734,522, Cl. 280-11.35t.

Salvi, Antoine: *See*—
Glenat, Henri; and Salvi, Antoine, 3,735,246.

Sampson, Henry T., to United States of America, Navy. Process for case bonding cast composite propellant grains. 3,734,982, Cl. 264-3.00r.

Sanders Associates, Inc.: *See*—
Hayner, Paul F.; and Bernier, Edgar R., 3,734,130.

Sanders, Grady H., to Deering Milliken Research Corporation. Scraper member for drafting system. 3,733,644, Cl. 15-256.530.

Sandy, James J., Jr., to United Aircraft Corporation. Turbopump having cooled shaft. 3,734,649, Cl. 417-370.000.

Sanet, Joel S.: *See*—
Diebold, James L.; Sanet, Joel S.; and Wolf, Milton, 3,734,903.

Sannipoli, Alfred L., to Lyco Manufacturing, Inc. Tank fabrication system. 3,734,387, Cl. 228-6.000.

Santomieri, Louis S. Fluid infusion. 3,734,095, Cl. 128-214.400.

Sapira, Said, to International Telephone and Telegraph Corporation. System for heating or air conditioning. 3,735,148, Cl. 307-133.000.

Sargent and Company: *See*—
Allen, Irving, 3,733,626.

Sarring, Ernest J.: *See*—
Bryson, Robert A.; Kennicott, Thomas C.; and Sarring, Ernest J., 3,733,947.

Sasmor, Ernest J.: *See*—
Halpern, Alfred; and Sasmor, Ernest J., 3,734,734.

Sato, Tadanori: *See*—
Akiyama, Yoshio; Sato, Tadanori; and Koyama, Shinobu, 3,734,069.

Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., to Medical Innovations, Inc. External pressure circulatory assist. 3,734,087, Cl. 128-64.000.

Sauerwein, William D.; Meloni, Robert A.; and Walter, Harvey J., to Black and Decker Manufacturing Company, The. Handle and trigger construction. 3,734,459, Cl. 251-285.000.

Sauvan, Jacques Louis: *See*—
Berthelemy, Jacques; Boul, Pierre Germain R.; and Sauvan, Jacques Louis, 3,735,109.

Sawmiller, Niles E.; Clymer, Gary C.; and Clymer, Larry R. Stair cart. 3,734,518, Cl. 280-5.300.

Sawyer, Bruce A. Linear magnetic drive system. 3,735,231, Cl. 318-687.000.

Sawyer, Ernest Robert, to Calgon Corporation. Connector for use in permeability separation devices. 3,734,855, Cl. 210-321.000.

Say, Donald L., to GTE Sylvania Incorporated. Color cathode ray tube. 3,735,190, Cl. 315-13.0cg.

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Novel compounds and process. 3,734,844, Cl. 204-159.140.

Sayles, David C., to United States of America, Army. Polybutadieneimine and process for preparation thereof. 3,734,895, Cl. 260-77.50r.

Scapa Dryers (Canada) Ltd.: *See*—
Haythornthwaite, James, 3,733,711.

Scarsborough, Don R.: *See*—
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Schaack, Harding Van. Tooth sensitivity testing method. 3,734,081, Cl. 128-2.00n.

Schabert, Hans-Peter; and Seidelberger, Hartmut, to Siemens Aktiengesellschaft. Device for controlling and shutting-down pressurized-water nuclear reactor. 3,734,825, Cl. 176-36.00r.

Schaefer, Frederic Charles; and Wright, Alan Carl, to American Cyanamid Company. N,N-diallylguanidine salts. 3,734,939, Cl. 260-404.500.

Schafer, Fritz Peter; and Schmidt, Werner, to Zeiss-Stiftung, Carl, d/b/a Zeiss, Carl. Device for wavelength selection in lasers with broad-band emission. 3,735,278, Cl. 331-94.500.

Schaffer, Rupert E.; Moseley, John C.; and Sharrod, Derrick, to Shell Oil Company. Process for sulfolane bonding of textile fibers. 3,734,799, Cl. 156-308.000.

Schantz, Ronald K., to Westinghouse Air Brake Company. Fluid control system. 3,733,964, Cl. 91-412.000.

Scharfe, Gerhard; Swodenk, Wolfgang; Grolig, Johann; and Martin, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Production of 3-acetoxy-2-methylene propionic acid alkyl esters. 3,734,950, Cl. 260-484.00a.

Schenck, Carl, Maschinenfabrik GmbH, Firma: *See*—
Birkholtz, Gottfried, 3,735,320.

Schenk, Horst: *See*—
Lippmann, Hans-Joachim; and Schenk, Horst, 3,733,688.

Scheyer, Marcel. Thermal fluid boiler. 3,734,066, Cl. 122-367.00r.

Schilling, Franz, to Siempelkamp Giesserei KG. Nuclear-reactor structure. 3,734,827, Cl. 176-87.000.

Schillinger, Joseph F.; and Bottomley, Robert Richard, to Champion International Corporation. Display carton with internal support. 3,734,284, Cl. 206-45.140.

Schirrich, Klaus: *See*—
Erk, Amir; Tessmann, Ottomar; and Schirrich, Klaus, 3,734,395.

Schlachter, Alfred S.: *See*—
Rork, Gerald D.; Schlachter, Alfred S.; Simon, Frank N.; and Stryk, Robert A., 3,735,138.

Schleicher GmbH & Co. Relaisbau KG: *See*—
Friedrich, Karl-Dieter, 3,735,205.

Schlein, Seymour N., to Fanner Manufacturing Company; a division of Textron, Inc. Method of forming gripping device. 3,733,681, Cl. 29-447.000.

Schlueter, Francis Edward, to Deere & Company. Discharge mechanism for cotton harvester. 3,734,563, Cl. 298-8.000.

Schmedding, Herbert; and Helbig, Helmut, to Windmoller & Holscher. Apparatus for the manufacture of bonded plastic sacks employing an electrical field and an ionizable gas. 3,734,849, Cl. 204-312.000.

Schmid, Eckhardt, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Hinge coupling for a windshield wiper assembly. 3,733,642, Cl. 15-250.320.

Schmid, Hermann: *See*—
Glockler, Otto; Schmid, Hermann; and Eichler, Dieter, 3,734,067.

Schmidt, Dale M.: *See*—
McIntosh, Walter L.; and Schmidt, Dale M., 3,734,630.

Schmidt, Erik: *See*—
Schmidt, Reinar; and Schmidt, Erik, 3,733,925.

Schmidt, Jude P.: *See*—
Kowalski, Walter; Park, Franklin; and Schmidt, Jude P., 3,735,035.

Schmidt, Otto W.; and Schmidt, Richard O., to Carswell, Firman L., Manufacturing Company, The. Floating dry dock. 3,734,046, Cl. 114-.500.

Schmidt, Reinar; and Schmidt, Erik. Thread cutting device for slide lathes. 3,733,925, Cl. 82-24.00a.

Schmidt, Richard O.: *See*—
Schmidt, Otto W.; and Schmidt, Richard O., 3,734,046.

Schmidt, Werner: *See*—
Schafer, Fritz Peter; and Schmidt, Werner, 3,735,278.

Schmidt-Hellerau, Christof: *See*—
Mayer, Johann; and Schmidt-Hellerau, Christof, 3,734,918.

Schmitt, Edward L.: *See*—
Tricini, John D.; and Schmitt, Edward L., 3,734,458.

Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, to VEBA-Chemie Aktiengesellschaft. Composition of polyamides of 2,2,4 and/or 2,4,4-trimethylhexamethylene diamines and epoxy compounds. 3,734,887, Cl. 260-47.0en.

Schneider, Hans-Dieter, to Fernseh G.m.b.H. Colour television camera utilizing two pickup tubes. 3,735,030, Cl. 178-5.4st.

Schneider, Theodor; Bock, Willy; and Schubert, Karl-Friedrich. Windshield wiper assembly for vehicles, particularly for motor vehicles. 3,733,913, Cl. 74-78.000.

Schneider, Thomas E.: *See*—
Elders, Gerald W.; Schneider, Thomas E.; and Alongi, John R., 3,734,380.

Schneider, Thomas R.: *See*—
Elders, Gerald W.; Schneider, Thomas E.; and Alongi, John R., 3,734,380.

Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Magnetic recording media. 3,734,772, Cl. 117-235.000.

Schneller, George H.; Levi, Ralph S.; Levin, Howard J.; and Goodsir, Stephen W., to American Home Products Corporation. Vented medicament dispensing package with spacer. 3,734,098, Cl. 128-272.000.

Schnyder, Conrad W., to CWS International AG. Paper handtowel dispenser. 3,734,586, Cl. 312-39.000.

Schonberg, Karl-Heinz: *See*—
Pfeiffer, Kurt; Dietrich, Johannes; Schonberg, Karl-Heinz; and Beckmann, Gunter, 3,734,400.

Schondelmyer, Scott M., to Dayton Manufacturing Company. Waste treatment system. 3,734,291, Cl. 210-152.000.

Schorel, Hendrik Jan, to Kroninklijke Nederlandsch Hoogovens En Staalfabriken. Laminated safety-glass and cabin furnished therewith. 3,734,815, Cl. 161-165.000.

Schrader, Henry S.: *See*—
Harpe, Ralph W.; and Schrader, Henry S., 3,734,613.

Schroder, Jurgen; Von Osten, Reimer; Nussbaum, Hans-Georg; and Bartels, Ulrich, to U.S. Philips Corporation. Circuit arrangement for character display. 3,735,385, Cl. 340-324.0ad.

Schroeder, Gunter; and Gaenzler, Wolfgang, to Rohm G.m.b.H. Preparation of foamed bodies using a urea blowing agent. 3,734,870, Cl. 260-2.50n.

Schubert, James R., to Fraze, Ermal C. Can end with nondetachable tab. 3,734,338, Cl. 220-54.000.

Schubert, Karl-Friedrich: *See*—
Schneider, Theodor; Bock, Willy; and Schubert, Karl-Friedrich, 3,733,913.

Schulte, Donald W.; and Logie, Charles F., to American Store Equipment Corporation. Fitting room. 3,733,759, Cl. 52-122.000.

Schultz, Matthew: *See*—
Schultz, William L.; and Schultz, Matthew, 3,734,159.

Schultz, William L.; and Schultz, Matthew. Tire changing device. 3,734,159, Cl. 157-1.000.

Schumacher, Gary B. Bearing housing assembly. 3,734,579, Cl. 308-20.000.

Schuman, Mark. Piston cylinder combination. 3,733,974, Cl. 92-172.000.

Schwab, Frederick C., to Mobil Oil Corporation. Blocking polystyrene produced by anionic slurry polymerization. 3,734,978, Cl. 260-878.00b.

Schwabenlender, Carl W., to Smith, A. O., Corporation. Low impact protection system for vehicles. 3,734,554, Cl. 293-88.000.

Schwartz, Edward C., to United States of America, Air Force. Crossover circuit for monopulse radar. 3,735,404, Cl. 343-16.00m.

Schweizer, Holger: *See*—
Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, 3,735,220.

Schwerko, Elaine M.: *See*—
Fitzgibbons, William O.; Schwerko, Elaine M.; and Brainard, Allan H., 3,734,943.

Sciaky, David, to Welding Research, Inc. Multiple electrode resistance welding machine. 3,735,089, Cl. 219-87.000.

S.C.J. Associates Inc.: *See*—
Apolant, Richard, 3,735,276.

SCM Corporation: *See*—
Doll, Peter A.; Cappotto, Samuel D.; Diamond, Herrick R.; and Lohr, Ernest F., 3,734,262.

Scofield, Donald H.; and Corl, James A. Composite conductor bar and method of manufacturing. 3,733,696, Cl. 29-624.000.

Scott, J. O., to Cities Service Oil Company. Method of in situ coal gasification. 3,734,184, Cl. 166-259.000.

Scott, Norman L., to Flexicore Co., Inc., The. Concrete building form construction. 3,733,757, Cl. 52-105.000.

Scott Paper Company: *See*—
Kitch, Paul E., 3,734,617.

Scovill Manufacturing Company: *See*—
Wallin, Gus Waldemar, 3,734,643.

Seal-Spout Corporation: *See*—
Brucker, Henry J.; Brucker, Robert J.; and Klausmann, Milton H., 3,734,361.

Searle, G. D., & Co.: *See*—
Cusic, John W.; and Coyne, William E., 3,734,971.

Searle Medidata, Inc.: *See*—
Rawson, Edward B.; and O'Riorden, David J., Jr., 3,734,082.

Searles, John W. Access panel for plumbing fittings. 3,733,622, Cl. 4-191.000.

Sebel, Hans-Georg, to Henkel & Cie G.m.b.H. Method for preventing the sliding or riding up of packaged articles by coating with adhesive compositions. 3,734,801, Cl. 156-309.000.

Seckman, John E.: *See*—
Edstrom, Soren E. H.; and Seckman, John E., 3,734,653.

Secresty, Anthony Vincent; and Grabowski, Edward Benedict, to Otis Elevator Company. Elevator installation with sealed passenger passageway. 3,734,238, Cl. 187-1.000.
Seger, Edward J., to Aluminum Company of America. Method and means for measuring electrode resistance. 3,735,253, Cl. 324-64.000.
Seglin, Leonard; and Gray, Charles A., to FMC Corporation. Steelmaking process. 3,734,716, Cl. 75-28.000.
Seglin, Leonard; and Gray, Charles A., to FMC Corporation. Production of phosphorus and steel from iron-containing phosphate rock. 3,734,717, Cl. 75-28.000.
Seibt, Willie; and Weir, Donald Robert, to Sherritt Gordon Mines Limited. Production of nickel powder from basic nickel carbonate. 3,734,721, Cl. 75-108.000.
Seidel, William C.: *See*—
Donnelly, Thomas S.; and Seidel, William C., 3,735,340.
Seidelberger, Hartmut: *See*—
Schabert, Hans-Peter; and Seidelberger, Hartmut, 3,734,825.
Seiersen, William K., to Marx, Louis, & Co., Inc., mesne. Soft ball with internal drag. 3,734,498, Cl. 273-63.00e.
Seiler, Edwin Nail. Paint mixing and paint roller mounting apparatus. 3,733,645, Cl. 15-257.00r.
Sekuler, Stanley H., to L & S Associates, Incorporated. Aerosol bird repellent composition. 3,734,875, Cl. 260-31.20r.
Selby, James R. Trailer frame. 3,734,529, Cl. 280-80.00b.
Self Serving Pty., Ltd.: *See*—
Teichelman, Edward Lindell, 3,734,344.
Sellman, Robert F. Conjugate cam arrangement and punch press utilizing same. 3,733,879, Cl. 72-328.000.
Sellner, John W. Swinging exercising device. 3,734,494, Cl. 272-58.000.
Selnick, Lester L.: *See*—
Aydin, Kemal M.; and Selnick, Lester L., 3,735,042.
Senju Metal Industry Co., Ltd.: *See*—
Tanaka, Jun; Taguchi, Toshihiko; and Nishibori, Yoshihiro, 3,733,687.
Sepp, Walter Edgar: *See*—
Pritchard, Dalton Harold; and Sepp, Walter Edgar, 3,735,028.
Sequin, Carlo Heinrich: *See*—
Krambeck, Robert Harold; and Sequin, Carlo Heinrich, 3,735,156.
Serban, Nicolae: *See*—
Hodosan, Francisc Petru; Serban, Nicolae; Balogh, Arbad; Jude, Ioan; Mantsch, Carol; and Bodor, Nicolae Stefan, 3,734,938.
Sertex Company of North America, Inc.: *See*—
Langford, Graham G., 3,735,143.
Severin, Petrus Johannes Wilhelmus, to U.S. Philips Corporation. Method of determining the sheet resistance therefor. 3,735,254, Cl. 324-64.000.
Seward, Thomas P., III: *See*—
Randall, Lyman James; and Seward, Thomas P., III, 3,734,754.
Seyfried, Richard F.; and Balzer, Norbert R., to Park-Ohio Industries, Inc. Method for inductively heating an elongated workpiece. 3,735,083, Cl. 219-10.410.
Seymour, James E., to Royster Company. Process for reducing emission of dust granular fertilizer compositions. 3,734,707, Cl. 71-30.000.
Shaffer, Donald U. Corrosion reducing apparatus for a producing oil well or the like. 3,734,181, Cl. 166-244.000.
Shaffer, John W., to GTE Sylvania Incorporated. Selective actuating mechanism for percussive photoflash lamp array. 3,735,111, Cl. 240-1.300.
Shakirov, Kuchkarali Tulaganovich: *See*—
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich, 3,734,227.
Shanahan, William J.: *See*—
Corwin, Jordan J.; and Shanahan, William J., 3,735,027.
Shape Form, Inc.: *See*—
Grigorenko, Donald O., 3,733,881.
Sharp, John R., to Polaroid Corporation. Process for manufacturing chromatic color screen. 3,734,737, Cl. 96-80.000.
Sharrod, Derrick: *See*—
Schaffer, Rupert E.; Moseley, John C.; and Sharrod, Derrick, 3,734,799.
Shasta Beverages; division of Consolidated Food Corporation: *See*—
Karr, Fred A., 3,734,850.
Shaw, Arthur, Manufacturing Limited: *See*—
Douglas, Jack E., 3,733,650.
Shea, Raymond E.: *See*—
Johnson, Wilfred V.; and Shea, Raymond E., 3,734,191.
Sheehan, John T.: *See*—
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,734,946.
Sheesley, John M., to Research Engineering Company. Motion conversion means. 3,733,914, Cl. 74-89.150.
Shefer, Joshua: *See*—
Kaplan, Gerald Stanley; and Shefer, Joshua, 3,735,335.
Shelburne, Eli Bently, Sr.: *See*—
Lipscomb, Walter Peter; and Shelburne, Eli Bently, Sr., 3,734,803.
Shell Oil Company: *See*—
Schaffer, Rupert E.; Moseley, John C.; and Sharrod, Derrick, 3,734,799.
Yates, John; and Devlin, Barry R. J., 3,734,711.
Sheller-Globe Corporation: *See*—
Carter, Rex D., 3,734,300.
Shellhause, Ronald L., to General Motors Corporation. Piston type contact actuator structure for automotive power brake switch assembly. 3,735,067, Cl. 200-61.860.
Shelton, Lewis E.: *See*—
Long, Delmer B.; and Shelton, Lewis E., 3,734,321.
Shepherd, Floyd, Jr., to Cities Service Oil Company. Apparatus for seismic wave detection. 3,734,232, Cl. 181-.5vm.
Shepherd, George Ronald, to Harper-Wyman Company. Energy regulators. 3,735,308, Cl. 337-13.000.
Shepherd, Thomas L.: *See*—
Estes, James W.; Geiger, Lewis J., Jr.; and Shepherd, Thomas L., 3,734,719.
Sherritt Gordon Mines Limited: *See*—
Seibt, Willie; and Weir, Donald Robert, 3,734,721.
Sherwin, Amos G. Fluorescent penetrant composition and method. 3,735,131, Cl. 250-71.00t.
Sherwin-Williams Company, The: *See*—
Vacek, Lubomir C., 3,734,921.
Sherwood Medical Industries, Inc.: *See*—
Borutta, Robert A.; and Koenig, Elmer A., 3,734,147.
Shibagaki, Kumekichi: *See*—
Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, 3,735,401.
Shibaura Electric Co., Ltd., The: *See*—
Funabashi, Tadao; and Murata, Kazuaki, 3,735,329.
Shields, Dean W., to Owens-Illinois, Inc. Method and apparatus for harvesting trees. 3,734,152, Cl. 144-3.00d.
Shima Idea Center Co., Ltd.: *See*—
Shima, Masahiro, 3,733,856.
Shima, Masahiro, to Shima Idea Center Co., Ltd. Flat knitting machine. 3,733,856, Cl. 66-62.000.
Shimazaki, Masaru: *See*—
Ieda, Motoi; Mizushina, Yoichi; and Shimazaki, Masaru, 3,735,008.
Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Fisheye lens systems. 3,734,600, Cl. 350-196.000.
Shimojo, Takemi: *See*—
Yanaga, Makoto; and Shimojo, Takemi, 3,735,068.
Shingledecker, Ross A., to Dow Corning Corporation. One component non-toxic self-extinguishing silicone elastomer. 3,734,881, Cl. 260-37.0sb.
Shio, Hideo; and Ramwell, Peter W., to Alza Corporation. Method for preparing a viable platelet concentrate. 3,735,005, Cl. 424-101.000.
Shionogi & Co., Ltd.: *See*—
Takamizawa, Akira; and Hirai, Kentaro, 3,734,913.
Shirley, Edward E. Device for wiring solderless connector terminal blocks. 3,733,674, Cl. 29-203.0hc.
Shirley, Richard L.: *See*—
Wastl, Max E.; and Shirley, Richard L., 3,734,603.
Shirohama, Masatoshi: *See*—
Nagai, Hiroshi; Shirohama, Masatoshi; Matsumoto, Kenichi; and Kamimura, Haruo, 3,733,871.
Shoeld, Mark. Spiral electrode storage battery with improved electrode assembly construction and method of making. 3,734,779, Cl. 136-13.000.
Shoemaker, Richard E. Integrated method and apparatus for continuous passenger or freight transport. 3,734,025, Cl. 104-88.000.
Shook, Helen A.: *See*—
Rimbey, Donald H., 3,734,525.
Short, Frederick R., to General Motors Corporation. Turbine cooling. 3,734,639, Cl. 415-114.000.
Shubeck, Frank. Intra-uterine contraceptive devices. 3,734,090, Cl. 128-130.000.
Shukla, Narendra M., to Burroughs Corporation. High voltage semiconductor pulse. 3,735,153, Cl. 307-246.000.
Shumaker, Charles Storer, to United Engineering and Foundry Company. Accumulator for strip-like material. 3,734,370, Cl. 226-119.000.
Shunta, Richard F.: *See*—
Zanoni, Paul; and Shunta, Richard F., 3,734,124.
Sidi, Henri, to Tenneco Chemicals, Inc. Carbamates of p-hydroxybenzoates. 3,734,948, Cl. 260-473.00r.
Sidlauskas, Donald M. Tricycle having driving energy storing arrangement. 3,734,535, Cl. 280-215.000.
Siedler, Helmut: *See*—
Haas, Helmut; and Siedler, Helmut, 3,734,412.
Siegart, William R.: *See*—
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,734,955.
Sieghartner, Leonard J., to Roth, Roy E., Company. Pump impeller maker. 3,734,697, Cl. 29-156.80r.
Siemens Aktiengesellschaft: *See*—
Eberhard, Gunter, 3,735,155.
Larsen, Herbert; and Martin, Helmut, 3,733,693.
Lippmann, Hans-Joachim; and Schenk, Horst, 3,733,688.
Maenicke, Eckart, 3,735,204.
Schabert, Hans-Peter; and Seidelberger, Hartmut, 3,734,825.
Thomas, Johann, 3,734,841.
Siempelkamp Giesserei KG: *See*—
Schilling, Franz, 3,734,827.
Sigma Instruments Inc.: *See*—
Beling, Thomas E., 3,735,141.
Yanikoshi, Florian F., 3,734,254.

Signatron, Inc.: *See—*
Getchell, Edward H., 3,735,396.
Simco Company, Inc., The: *See—*
Barnett, Roy F.; Levy, Warren W.; and Simons, Dolph, 3,735,198.
Simjian, Luther G. Article handling apparatus. 3,734,286, Cl. 209-121.000.
Simmonds Precision Products, Inc.: *See—*
Wisniewski, Jules, 3,735,173.
Simmons, Clarence C. Pocket tablet dispenser. 3,734,283, Cl. 206-42.000.
Simms, Ross P.: *See—*
Hayes, Lester P.; and Simms, Ross P., 3,734,901.
Simon, Frank N.: *See—*
Rork, Gerald D.; Schlachter, Alfred S.; Simon, Frank N.; and Stryk, Robert A., 3,735,138.
Simons, Dolph: *See—*
Barnett, Roy F.; Levy, Warren W.; and Simons, Dolph, 3,735,198.
Sims, Eugene F.: *See—*
Paysinger, Joseph R.; Sims, Eugene F.; and Nelson, Jerome W., 3,733,939.
Singer Company, The: *See—*
Aydin, Kemal M.; and Selnick, Lester L., 3,735,042.
Lubas, Joseph P., 3,733,701.
Singer Company, The, mesne: *See—*
Ares, Roland A.; Bullard, Russell H.; and Spear, Ernest L., 3,734,171.
Singh, Alamjit D. Low sulphur fuel system. 3,734,833, Cl. 201-17.000.
Sinkovitz, Gloria Dimarco: *See—*
Hoover, Merwin Frederick; and Sinkovitz, Gloria Dimarco, 3,734,820.
Sinloihi Co.: *See—*
Wakimoto, Saburo; Tugukuni, Hideyoshi; and Kano, Masafumi, 3,734,872.
Sinnott, David J.; and Alecci, Donald E., to Star-New-Era, Inc. Photographic composition system using a galvanometer movement. 3,733,983, Cl. 95-4.50r.
Sinnott, Norbert C.; and Jones, Harold A., Jr., to United States of America, Air Force. High power electrically variable inductor. 3,735,305, Cl. 336-110.000.
Sitabkhan, Abdul N.: *See—*
Kermer, Jack M.; and Sitabkhan, Abdul N., 3,735,376.
Sivertsen, Marvin L.: *See—*
Bock, John W.; and Sivertsen, Marvin L., 3,735,130.
Six, Robert C., Jr. Impact-opening electrical switch with breakable frangible element. 3,735,072, Cl. 200-61.45r.
Skardal, Karl Arvid. Discharge device for the bottom fraction at a vortex type separator. 3,734,288, Cl. 209-211.000.
SKF Industrial Trading and Development Company N.V.: *See—*
Asberg, Sture Lennart; and Timmer, Hendrikus Jacobus Maria, 3,733,648.
Skiatron Electronics & Television Corporation: *See—*
Corwin, Jordan J.; and Shanahan, William J., 3,735,027.
Skolnik, Marvin B.: *See—*
Dalton, John J.; and Skolnik, Marvin B., 3,735,182.
Skripsky, Harold O. Portable workbench. 3,734,151, Cl. 144-1.00r.
Slade, Harry Boone, to Hendrix Wire and Cable Corporation. Apparatus and method for spreading apart electric power cable wires. 3,734,462, Cl. 254-1.000.
Slagle, William L., to United States of America, Atomic Energy Commission. Method of suppressing the formation of methyl iodide in a water-cooled nuclear reactor. 3,734,826, Cl. 176-37.000.
Slavin, Michael: *See—*
Dorsey, Charles M.; Laurent, Harold J.; Slavin, Michael; and Stauffer, Reuben Laverne, 3,735,268.
Hickner, George B.; Slavin, Michael; and Howard, Donald W., 3,734,572.
Sletten, Carlyle J.; and Holt, F. Sheppard, to United States of America, Air Force. Anti radar clutter cancelling method and apparatus. 3,735,400, Cl. 343-7.700.
Sletten, Caryle J.; and Holt, F. Sheppard, to United States of America, Air Force. Method for improving the target position vector accuracy of an anti radar. 3,735,399, Cl. 343-7.700.
Sletzinger, Meyer: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,734,937.
Sloan, Clark E., Jr., to General Motors Corporation. Vibrator type electrical circuit interrupter. 3,735,311, Cl. 337-108.000.
Sloane, Jack: *See—*
Pankow, Norman N.; and Sloane, Jack, 3,734,336.
Small, Augustus B.; Gorman, Paul T.; and McGarry, Frederick J., to Esso Research and Engineering Company. Laminated construction of cellular plastic material. 3,734,811, Cl. 161-37.000.
Smart, Daniel Henry: *See—*
Baker, Henry Louis; Quinton, Kenneth Charles; and Smart, Daniel Henry, 3,735,037.
Smatko, Joseph S., to McDonnell Douglas Corporation. Low-gassing high strength battery separator and method of production. 3,734,781, Cl. 136-146.000.
Smedley, William L. Well packer and pump apparatus. 3,734,179, Cl. 166-106.000.
Smedley, William L. Method of increasing capacity in a well. 3,734,190, Cl. 166-315.000.
Smith, A. O., Corporation: *See—*
Schwabenlender, Carl W., 3,734,554.
Smith, Ashley P., to Northrop Carolina, Inc. Apparatus for crimping thermosetting fiber. 3,733,659, Cl. 28-1.700.
Smith, Bernard L. Plural bung tool. 3,733,938, Cl. 81-119.000.
Smith, Clyde W.; and Mc Mann, Renville H., to Columbia Broadcasting System, Inc. Automatic color corrector for a color video signal. 3,735,026, Cl. 178-5.40r.
Smith, Dorman, Switchgear Limited: *See—*
Kidd, Alan Lister, 3,735,075.
Smith, Forrest D. Ventilated toilet. 3,733,619, Cl. 4-72.000.
Smith, Frank A. Metal coated with a silicone elastomer containing monocellular particles for ablative purposes. 3,734,768, Cl. 117-132.0bs.
Smith, Frank T.; and Smith, Robert D. Self-cleaning filter assembly. 3,734,295, Cl. 210-278.000.
Smith, James M., to Great Western Sugar Company, The. Continuous flow scale with alternating volumetric measuring and weighing chambers. 3,734,215, Cl. 177-59.000.
Smith Kline & French Laboratories, Limited: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,734,924.
Smith, Peter W., to United Aircraft Corporation. Temperature compensated latching phase shifter having compensating dielectric in aperture of ferrite core. 3,735,291, Cl. 333-24.100.
Smith, Richard H. Self-propelled platform tower having mechanical and hydraulic supporting means. 3,734,220, Cl. 180-8.00e.
Smith, Robert D.: *See—*
Smith, Frank T.; and Smith, Robert D., 3,734,295.
Smith, Ruth Ann. Drafting board attachments. 3,733,703, Cl. 33-79.00r.
Smith, Theodore M. Chuck assembly for tool holders. 3,734,516, Cl. 279-75.000.
Smith, Thomas R., to Maytag Company, The. Clothes drier having moisture sensing control. 3,733,712, Cl. 34-45.000.
Smith, Willis R., to General Signal Corporation. Control of multiple highway crossings. 3,734,434, Cl. 246-125.000.
Smith-Berger Manufacturing Corporation: *See—*
Lawrence, Frank L., 3,733,812.
Snaith, William, Inc.: *See—*
Butler, David R., 3,733,755.
Snellman, Donald L., to Norfin, Inc. Track assembly for endless track vehicles. 3,734,577, Cl. 305-40.000.
Snyder, Larry F. Time lock board game apparatus. 3,734,508, Cl. 273-134.00c.
Snyder, Ramon Eugene: *See—*
Maholick, Andrew Walter; Newlin, Frank Allen, III; Snyder, Ramon Eugene; and Stager, Stanley Ray, III, 3,735,357.
Societa Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; and Piccolo, Luigi, 3,735,000.
Societe Anonyme D.B.A.: *See—*
Girauldon, Jean-Claude, 3,734,243.
Montjourides, Pierre, 3,734,246.
Muterel, Roland, 3,733,823.
Rivolier, Charles, 3,734,228.
Societe Anonyme dite: Aquitaine Total Organico: *See—*
Bravi, Jean-Claude; Poulain, Claude; and Viallet, Claude, 3,734,845.
Societe Anonyme Richier: *See—*
Durand, Pierre, 3,734,302.
Societe Anonyme: Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Berthelemy, Jacques; Boul, Pierre Germain R.; and Sauvan, Jacques Louis, 3,735,109.
Societe des Accumulateurs Fixes et de Traction: *See—*
Godard, Pierre, 3,735,234.
Societe Nationale Industrielle Aerospatiale: *See—*
Garcia, Jean-Claude, 3,734,644.
Societe Nouvelle de Roulements: *See—*
Beauchet, Jean, 3,734,582.
Societe Nouvelle Spidem: *See—*
Diolot, Lucien, 3,733,870.
Solar Hardware Corporation: *See—*
Anderson, William J., 3,734,054.
Solomon, Marwick H.: *See—*
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwick H., 3,735,025.
Son, Marion O., Jr. Use of micellar dispersions as drilling fluids. 3,734,856, Cl. 252-8.50m.
Sony Corporation: *See—*
Mori, Iwao, 3,734,593.
Uemura, Saburo, 3,735,216.
Sorensen, Peter F.: *See—*
Whitney, John A.; and Sorensen, Peter F., 3,735,347.
Sorvall, Ivan, Inc.: *See—*
Petcoff, Darrell G., 3,734,693.
Soudrons, Edmond, to Etablissements Thomas Defawes. Heat exchanger. 3,734,178, Cl. 165-170.000.
Soulakis, George: *See—*
Hiltpold, John P.; and Soulakis, George, 3,733,744.
Soult, Charles J., to Biomarine Industries, Inc. Electronic monitoring control and display apparatus for breathing gas system. 3,735,382, Cl. 340-279.000.
Southern, Raymond L.: *See—*
Kozak, Larry M.; and Southern, Raymond L., 3,734,384.
Kozak, Larry M.; and Southern, Raymond L., 3,734,385.

Southwire Company: *See—*
Chia, Enrique C.; Ward, George C.; and Lenaeus, George E., 3,734,162.

Soya, Masahiro; Aizawa, Kensuke; and Hasegawa, Hiroaki, to Tokico Ltd. Computing apparatus for a calorimeter. 3,733,896, Cl. 73-193.00r.

Soykan, Ferhun H., to Special Metals Corporation. Circular refractory brick construction. 3,735,011, Cl. 13-35.000.

Spanjer, Keith G., to Motorola, Inc. Apparatus for control of welding apparatus. 3,734,382, Cl. 228-1.000.

Sparacio, Francis J.: *See—*
Anderson, David W.; Gustafson, Richard N; Johnson, Lance H.; and Sparacio, Francis J., 3,735,360.

Sparks, Allen K.: *See—*
Cyba, Henrik A.; and Sparks, Allen K., 3,734,758.

Sparks, Charles L.; deceased (by Sparks, Florence J.; executrix). Compressor pump. 3,734,647, Cl. 417-269.000.

Sparks, Florence J.: *See—*
Sparks, Charles L., 3,734,647.

Sparton Corporation: *See—*
Thomas, Chas E., 3,734,995.

Spatzek, Ronald M.: *See—*
Krasnitz, Jacob; Krasnitz, Martin; Spatzek, Ronald M.; and Krasnitz, Ronald H., 3,734,039.

Spear, Ernest L.: *See—*
Ares, Roland A.; Bullard, Russell H.; and Spear, Ernest L., 3,734,171.

Special Metals Corporation: *See—*
Soykan, Ferhun H., 3,735,011.

Sperry & Hutchinson Company: *See—*
Fishkin, Bruce I.; and Taylor, John J., 3,734,544.

Sperry Rand Corporation: *See—*
Delaney, Lyle F.; and Mager, Leon A., 3,735,354.
Kritz, Jacob A., 3,735,200.
Ross, Gerald F., 3,735,398.

Spicacci, Attilio. Multi-stage flash distillation process. 3,734,835, Cl. 203-7.000.

Spiecker, Karl Heinz, to Demag AG. Wire mill in block form. 3,733,874, Cl. 72-235.000.

Spievak, Louis A. Type composer. 3,733,978, Cl. 95-4.500.

Spinner, Georg. Coaxial line section. 3,735,016, Cl. 174-28.000.

Spoor, Paul A.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,733,960.

Sprecker, Donald H. Pack and fastener. 3,734,365, Cl. 224-8.00r.

Spriggs, Frank A., to Pneumo Dynamics Corporation. Rotary cutting tool. 3,733,665, Cl. 29-105.00r.

Squibb, E. R., & Sons, Inc.: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,734,946.

Squibb, E. R., Sons, Inc.: *See—*
Ryu, Dewey Y.; Lee, Bong Kuk; and Thoma, Richard W., 3,734,830.

Squibb, E.R., & Sons, Inc.: *See—*
Bernstein, Jack; and Losee, Kathryn A., 3,734,953.

S.R.M. Hydromekanik AB: *See—*
Ahlen, Karl Gustav, 3,734,252.

Sociele d'Etudes et de Construction de Materiel Electrique et Radioelectrique S.E.C.M.E.R.: *See—*
Guillaud, Michel Pierre Cyrille, 3,734,665.

Stack-Pac Corporation: *See—*
Terrasi, Chris C., 3,733,975.

Stager, Stanley Ray, III: *See—*
Maholick, Andrew Walter; Newlin, Frank Allen, III; Snyder, Ramon Eugene; and Stager, Stanley Ray, III, 3,735,357.

Stahlhut, Leo G., to Emerson Electric Co. Prismatic lenses for lighting fixtures. 3,735,124, Cl. 240-106.00r.

Stahmer, B.: *See—*
Brown, Byron T.; and Stahmer, B., 3,734,138.

Stalder, Fred, to Clothes-peg. . 3,733,656, Cl. 24-137.00r.

Staley, A. E., Manufacturing Company: *See—*
Jones, Rexford W.; and Thompson, William B., 3,734,729.
Jones, Rexford W.; and Thompson, William B., 3,734,730.
Jones, Rexford W.; and Thompson, William B., 3,734,731.
Jones, Rexford W.; and Thompson, William B., 3,734,732.

Staley, A.E., Manufacturing Company: *See—*
Hayes, Lester P.; and Simms, Ross P., 3,734,901.

Stanadyne, Inc.: *See—*
Bruno, Leonard, 3,734,410.

Standard Mirror Company, Inc.: *See—*
Perison, Ronald C., Sr., 3,734,447.

Standard Oil Company, The: *See—*
Fitzgibbons, William O.; Schwerko, Elaine M.; and Brainard, Allan H., 3,734,943.

Standard Pressed Steel Co.: *See—*
Willy, Glenn R., 3,733,958.

Stanger & Co., Ltd.: *See—*
Swarbrick, John Atkinson; and Thornbury, Vaclav Puta, 3,735,315.

Stanley, Marland L.; and Reich, Allen D., to Borg-Warner Corporation. Method and apparatus for measuring the thermal conductivity and thermo-electric properties of solid materials. 3,733,887, Cl. 73-15.00a.

Stanley, Robert L. Pipeline transmission system. 3,734,137, Cl. 138-105.000.

Stannett, Vivian T.: *See—*
Williams, Joel L.; and Stannett, Vivian T., 3,734,127.

Staples, Philip Arthur. Ball projecting device. 3,734,075, Cl. 124-1.000.

Star-New-Era, Inc.: *See—*
Sinnott, David J.; and Alecci, Donald E., 3,733,983.

Stark, Edward M.; and Elkas, Louis, to Emhart Corporation. Barrel retainer for shotguns. 3,733,732, Cl. 42-75.00d.

Stark, Robert E.: *See—*
Hug, Leonard F.; Grossman, Phillip A.; Young, Roland L.; and Stark, Robert E., 3,734,778.

Staub, Alfred: *See—*
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,734,934.

Stauffer Chemical Company: *See—*
Greco, Carl C.; and Martin, Donald J., 3,734,753.
McDonald, Harold, 3,734,783.
Pallos, Ferenc M., 3,734,980.
Pitt, Harold M., 3,734,969.

Stauffer, Reuben Laverne: *See—*
Dorsey, Charles M.; Laurent, Harold J.; Slavin, Michael; and Stauffer, Reuben Laverne, 3,735,268.

Stead, Ronald B. Dual purpose recreational vehicle. 3,734,558, Cl. 296-23.00r.

Steelcase Inc.: *See—*
Mc Kay, Robert H., 3,733,651.
Ormiston, Robert B.; and Wilcox, Gale F., 3,734,590.

Steimer, Robert G., to Mesta Machine Company. Work roll sensing and/or balancing arrangements. 3,733,875, Cl. 72-237.000.

Stein, Hermann: *See—*
Zimmer, Gerhard; and Stein, Hermann, 3,735,003.

Stein, Reinhardt P.: *See—*
Husbands, George E. M.; and Stein, Reinhardt P., 3,734,935.

Steinbrunn, Gustav: *See—*
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,734,712.

Stelle, Doty M. Implement for forming pie crust. 3,734,674, Cl. 425-458.000.

Stelzer, William, to Kelsey-Hayes Company. Proportioning device. 3,734,570, Cl. 303-6.00c.

Stenger, Hanns G. Multiple pocket card holder. 3,734,155, Cl. 150-39.000.

Stengle, Ernst: *See—*
Glaser, Karl; and Stengle, Ernst, 3,735,059.

Sterigard Corporation: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,734,125.

Sterling Radiator Company, Inc.: *See—*
Phillips, Leonard R., 3,734,114.

Stern, Max H.: *See—*
Figueras, John; and Stern, Max H., 3,734,726.

Stevens, Alan F.: *See—*
Montgomery, Harold S.; and Stevens, Alan F., 3,733,717.

Stevenson, Norman A. Brazing method for carbide tipped saw blades. 3,733,934, Cl. 76-112.000.

Stewart, John Stewart Simpson. Physiotherapy control device. 3,735,101, Cl. 235-92.00t.

Stibbe Machinery Limited: *See—*
Bliss-Hill, Herbert Brian; and Tewsley, Eric William, 3,733,855.

Sticker, Charles W., Jr., to Gray Tech Industries, Inc. Method and apparatus for preventing erosion and for conveying. 3,733,831, Cl. 61-4.000.

Stickler, Charles W., Jr. Portable mold for erecting concrete or plastic shelters. 3,734,670, Cl. 425-405.00a.

Stievenart, Emile Frans; and Verbruggen, Herman Fernand, to Agfa-Gevaert N.V. Device for processing photographic material. 3,733,992, Cl. 95-94.00r.

Stigviis, Albert Charles, to GTE Automatic Electric Laboratories Incorporated. Phase shifter circuit. 3,735,245, Cl. 323-109.000.

Stillbert, Leonard R. Time controlled automatic programming device with adjustable pins on programming drum and adjustable contact array. 3,735,063, Cl. 200-38.0ca.

Stille, John K. Laminated products bonded together with a quinoxaline polymer. 3,734,818, Cl. 161-213.000.

Stimler, Morton, to United States of America, Navy. Low light level laser imaging system. 3,735,140, Cl. 250-213.0vt.

Stoddard, Gordon E.: *See—*
Miller, Robert C.; and Stoddard, Gordon E., 3,733,753.

Stoll, Donald F., to El Paso Natural Gas Company. Spoked electrode for monitoring earth currents. 3,735,249, Cl. 324-9.000.

Stone, Charles W., to Zimmerman, D. W., Mfg., Inc. Safety interlock for fluid-operated, load-handling apparatus. 3,734,325, Cl. 214-658.000.

Stott, Thomas H. Optical display. 3,735,113, Cl. 240-6.40g.

Stout, William A., to Portco Corporation. Irrigation connection. 3,734,545, Cl. 285-5.000.

Stoy, Arthur, to Ceskoslovenska akademie ved. Polymers containing silver and copper derived from cyano and sulfonic containing monomers. 3,734,897, Cl. 260-79.3mu.

Strait, Bernard S., Jr.: *See—*
Kilgore, Lee A.; Strait, Bernard S., Jr.; and Whitney, Eugene C., 3,735,217.

Straszko, Jerzy: *See—*
Pischinger, Ernest; Bursa, Stanislaw; Koneczny, Henryk; and Straszko, Jerzy, 3,734,709.

Strauss, George M., to United States of America, Navy. Phase modulator. 3,735,288, Cl. 332-18.000.

Stritzinger, Heinz: *See—*
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.

Strobel, Walter. Fixture for assembling die and work support plates. 3,733,671, Cl. 29-200.00p.

Strohmeier, Harald, to Gebr. Bohler & Co., AG. Screw extruder. 3,734,472, Cl. 259-192.000.

Strub, Rene, to Brown Boveri-Sulzer Turbomachinery Limited. Turbine blade assembly. 3,734,645, Cl. 416-214.000.

Stryk, Robert A.: *See—*
Rork, Gerald D.; Schlachter, Alfred S.; Simon, Frank N.; and Stryk, Robert A., 3,735,138.

Stryker Corporation: *See—*
Barnett, John E., 3,734,652.

Stuber, Fred A.: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,734,844.

Studer, Robert Martin, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Roller bearing. 3,734,584, Cl. 308-213.000.

Studinka, Josef; and Gabler, Rudolf, to Inventa A.G. fur Forschung und Patentverwertung. Process for the manufacture of linear aromatic poly-1,3,4-oxadiazoles. 3,734,893, Cl. 260-78.40r.

Stueve, Paul Joseph: *See—*
Heiple, Danforth Kingsbury; Hillman, Danny Lee; Orth, Edward George; and Stueve, Paul Joseph, 3,734,576.

Stump, Paul W., to Clevesak Corporation. Wide mouth tubular container construction. 3,734,393, Cl. 229-43.000.

Stumpf, Gunter. Conveyor-magazine adapted for being interposed between a folding machine and stations where subsequent operations are effected. 3,734,264, Cl. 198-20.00t.

Sturgeon, Walter L.: *See—*
Benetti, John G.; and Sturgeon, Walter L., 3,734,214.

Stuttler, Robert A.: *See—*
Zentz, Robert J.; and Stuttler, Robert A., 3,733,924.

Sugasawara, Tsunesaburo, to Sugatsune Industrial Co., Ltd. Stopper for holding a door open. 3,734,553, Cl. 292-251.500.

Sugatsune Industrial Co., Ltd.: *See—*
Sugasawara, Tsunesaburo, 3,734,553.

Sugihara, Takashi F.: *See—*
Kline, Leo; and Sugihara, Takashi F., 3,734,743.

Sugimoto, Masashi, to Toyooki Kogyo Kabushiki Kaisha. Fluid cylinder. 3,733,971, Cl. 92-26.000.

Sugiura, Masaki: *See—*
Chibata, Ichiro; Kisumi, Masahiko; Kato, Jyoji; and Sugiura, Masaki, 3,734,829.

Sullivan, Paul E.: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 3,734,546.

Sultanov, Saidikarim: *See—*
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich, 3,734,227.

Sulzer Brothers Limited: *See—*
Kreissig, Ernst Florian; and Feuerlein, Karl, 3,734,030.
Vogeli, Ernst, 3,734,134.

Sumitomo Metal Industries Limited: *See—*
Nakamura, Hisashi; and Tanaka, Masatoshi, 3,734,140.

Sun Chemical Corporation: *See—*
Bassemir, Robert W.; and Mayer, Julius Robert, 3,733,709.

Sun Oil Company: *See—*
Hansel, William B., 3,734,149.
Young, Einar T., 3,734,339.

Sun Oil Company, mesne: *See—*
Lerner, Julius; and Mayer, Robert, 3,735,371.

Sun Oil Company of Pennsylvania: *See—*
Bachofer, Henry L.; and Chang, Robert C. C., 3,735,224.

Sun Shipbuilding & Dry Dock Company: *See—*
Cantagallo, Raymond E.; and Lutz, Robert J., 3,733,849.

Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 3,734,354.

Sundstrand Corporation: *See—*
Beck, Richard, Jr., 3,734,637.
Nyman, Bengt E.; and Becker, Larry T., 3,733,931.
Zentz, Robert J.; and Stuttler, Robert A., 3,733,924.

Sunstein, David E. Method and apparatus for maintaining the beam current of an image-display device within controlled limits. 3,735,029, Cl. 178-5.40r.

Suprunchuk, Tony: *See—*
Wiles, David M.; and Suprunchuk, Tony, 3,734,757.

Sureau, Robert Frederic Michel: *See—*
Roe, Rene Pierre Victor; Levavasseur, Andre Adolphe Rene; Sureau, Robert Frederic Michel; and Alicot, Marie-Josephe Jeanne, 3,734,905.

Surwill, Michael, to Lockheed Aircraft Corporation. Adjustable wedge assembly. 3,734,481, Cl. 269-228.000.

Suter, Hubert; Jahn, Juergen; Janka, Franz; Brunnmueller, Friedrich; and Claren, Otto Bernd, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of neutral adipic esters. 3,734,951, Cl. 260-485.00r.

Sutliff, Wayne N.; and Downen, Jim L. Flexible drill string joint. 3,733,853, Cl. 64-7.000.

Sutyak, John J., to Mesta Machine Company. Cutting methods. 3,733,943, Cl. 83-7.000.

Suzuki, Ken. Anti-pollution device for combustion engine exhaust gases. 3,733,827, Cl. 60-278.000.

Suzuki, Yukio: *See—*
Miyake, Toshio; and Suzuki, Yukio, 3,734,828.

Svaty, Vladimir, to Elitex, Zavody textilniho strojirenstvi, generalni reditelstvi. Measuring and length determining means for weft yarn in shuttleless looms. 3,734,143, Cl. 139-127.00p.

Swarbrick, John Atkinson; and Thornbury, Vaclav Puta, to Stanger & Co., Ltd. Fuse links for dropout explosion fuses. 3,735,315, Cl. 337-290.000.

Swasey, Joyce A. Laminated structure having a renewable tacky surface. 3,734,816, Cl. 161-167.000.

SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
Schmid, Eckhardt, 3,733,642.

Swirczynski, John P.: *See—*
Sztankay, Zoltan G.; Holland, Richard J.; and Swirczynski, John P., 3,734,592.

Switches Incorporated: *See—*
Wolf, Walter A.; and Corn, Prentice R., 3,735,380.

Swodenk, Wolfgang: *See—*
Scharfe, Gerhard; Swodenk, Wolfgang; Grolig, Johann; and Martin, Manfred, 3,734,950.

Sybron Corporation: *See—*
Britton, Orson J., 3,735,251.
Cousins, Leroy L., 3,734,122.

Sydor, Walter Joseph, to American Cyanamid Company. Process for converting urethanes to isocyanates. 3,734,941, Cl. 260-453.00p.

Sykes, David F., to Raytheon Company. Tracking radar. 3,735,403, Cl. 343-16.00r.

Sylvania Electric Proudcts, Inc.: *See—*
Bonazoli, Robert P.; and Keenan, James P., 3,735,185.

Symons Corporation, mesne: *See—*
Bell, Hans K.; and Hay, Gilbert, Jr., 3,735,221.

Synergistics, mesne: *See—*
Halpern, Alfred; and Sasmor, Ernest J., 3,734,734.

Systron-Donner Corporation: *See—*
Lincoln, Dale, 3,734,335.

Szostak, Noland; Hartwig, Karl; and Maurischat, Gunter, to Afga-Gevaert Aktiengesellschaft. Electrostatic copying apparatus. 3,734,604, Cl. 355-14.000.

Sztankay, Zoltan G.; Holland, Richard J.; and Swirczynski, John P., to United States of America, Army. High intensity light limiting device. 3,734,592, Cl. 350-17.000.

Taguchi, Masayuki: *See—*
Fukugami, Goro; Tamura, Chiaki; Taguchi, Masayuki; and Maekawa, Kenichi, 3,733,952.

Taguchi, Toshihiko: *See—*
Tanaka, Jun; Taguchi, Toshihiko; and Nishibori, Yoshihiro, 3,733,687.

Tahara, Akira; Ohtsuka, Yasuo; Nakata, Tadashi; and Takada, Shoichi, to Rikagaku Kenkyusha Saitama-Ken. Hydrofluorene dicarboxylic acid derivatives and process for preparing the same. 3,734,966, Cl. 260-515.00p.

Takada, Shoichi: *See—*
Tahara, Akira; Ohtsuka, Yasuo; Nakata, Tadashi; and Takada, Shoichi, 3,734,966.

Takahashi, Shinkichi: *See—*
Tanaka, Hiroshi; and Takahashi, Shinkichi, 3,734,609.

Takakuwa, Shigeru; Iwami, Kenichi; and Ide, mitsuo, to Matsushita Electric Industrial Co., Ltd. Steamer. 3,733,723, Cl. 38-69.000.

Takamizawa, Akira; and Hirai, Kentaro, to Shionogi & Co., Ltd. Thiamine derivatives and production thereof. 3,734,913, Cl. 260-256.500.

Takasugi, Kazuo: *See—*
Nakamura, Hideo; Takasugi, Kazuo; Hiroshima, Minoru; and Inose, Fumiyuki, 3,735,365.

Taketomi, Bunsaku. Stitching mechanism. 3,734,038, Cl. 112-121.150.

Talasz, Johann, to Voit, J. M., GmbH. Mold closing unit. 3,734,671, Cl. 425-450.000.

Talcott, Thomas D., to Dow Corning Corporation. Method of making an improved processable silicone rubber and product thereof. 3,734,882, Cl. 260-37.0sb.

Tall, Leonard H.: *See—*
Erickson, Arlen J.; and Tall, Leonard H., 3,733,770.

Tamura, Chiaki: *See—*
Fukugami, Goro; Tamura, Chiaki; Taguchi, Masayuki; and Maekawa, Kenichi, 3,733,952.

Tanabe Seiyaku Co., Ltd.: *See—*
Chibata, Ichiro; Kisumi, Masahiko; Kato, Jyoji; and Sugiura, Masaki, 3,734,829.

Tanaka, Hiroshi; and Takahashi, Shinkichi, to Canon Kabushiki Kaiska. Electrophotographic process and apparatus. 3,734,609, Cl. 355-16.000.

Tanaka, Jun; Taguchi, Toshihiko; and Nishibori, Yoshihiro, to Senju Metal Industry Co., Ltd. Method of soldering an aluminum metal to an aluminum or another metal. 3,733,687, Cl. 29-504.000.

Tanaka, Masatoshi: *See—*
Nakamura, Hisashi; and Tanaka, Masatoshi, 3,734,140.

Tanaka, Yoshiyuki. Emergency stop switch means for a mobilized sledge or the like. 3,734,230, Cl. 180-99.000.

Tang, Alexander Reuben, to Crown Controls Corporation. Safety lock for portable lift mechanism. 3,734,240, Cl. 187-89.000.

Taplin, Ronald H., to Airco Inc. Oxygen control system with blood oxygen saturation sensing means and method for closed system breathing. 3,734,091, Cl. 128-142.000.

Tappan Company, The: *See—*
Perl, Richard L., 3,734,681.

Tarczy-Hornoch, Zoltan, to Zeta Research, Inc. Digital graphic display apparatus, system and method. 3,735,389, Cl. 340-324.00a.

Tarnoff, Fleurette: *See—*
Engelhard, Otto, 3,733,860.

Tarnoff, Mark: *See—*
Engelhard, Otto, 3,733,860.

Tasso, Joseph N. Information store system having data block shift registers. 3,735,361, Cl. 340-172.500.

Tatch-A-Cleat Products: *See—*
Ross, Earl W., 3,734,269.

Tatra, narodni podnik: *See—*
Popelar, Vladimir; and Ryc, Oldrich, 3,734,530.

Tax, Hans: *See—*
Tax, Hans; and Franke, Rudiger (said Franke assor. to said), 3,734,555.

Tax, Hans; and Franke, Rudiger, said Franke assor. to said Tax, Hans. Convertible carrier frame for shipping containers. 3,734,555, Cl. 294-81.0sf.

Taylor, Francis R.: *See—*
Kirshenbaum, Abraham D.; and Taylor, Francis R., 3,734,790.

Taylor, John J.: *See—*
Fishkin, Bruce I.; and Taylor, John J., 3,734,544.

Taylor, Roland, to United Kingdom Atomic Energy Authority. Filters. 3,733,792, Cl. 55-488.000.

Teague, Walter Dorwin, Jr. Boot jack device. 3,734,363, Cl. 223-116.000.

Technicon Instruments Corporation: *See—*
Adler, Stanford L., 3,734,622.

Tedco, Inc.: *See—*
Morine, Richard L.; and Hokes, James J., 3,734,356.

Teichelman, Edward Lindell, to Self Serving Pty., Ltd. Coin operated article vending machine. 3,734,344, Cl. 221-14.000.

Teledyne Inc.: *See—*
Craik, Darrel W., 3,733,767.

Telephon- und Telegraphen-Fabriks Aktiengesellschaft: *See—*
Altmann, Josef, 3,735,294.

Templeton, William B.: *See—*
Beery, Jack; and Templeton, William B., 3,734,491.

Tempmaster Corporation: *See—*
Dean, Frank James, Jr., 3,734,192.

Temtool Pty., Limited: *See—*
Williams, Patrick Robert, 3,733,751.

Tenan, Harry D.: *See—*
Dever, James A.; Tenan, Harry D.; and Finley, George R., 3,734,536.

Tenne, Lave, to Hasselblad, Fritz Victor. Light measuring apparatus for a single-lens reflex camera. 3,733,988, Cl. 95-42.000.

Tenneco Chemicals, Inc.: *See—*
Minieri, Pasquale P., 3,734,925.
Sidi, Henri, 3,734,948.

Tenneco Oil Company: *See—*
Montgomery, James William; and Reifel, Michael D., 3,735,129.

Tenney Engineering, Inc.: *See—*
O'Sullivan, George, 3,735,241.

Terrasi, Chris C., to Stack-Pac Corporation. Corner block forming apparatus. 3,733,975, Cl. 93-84.00r.

Terzian, Rouben T., to Glass, Marvin, & Associates. Motor operated toy vehicle. 3,733,739, Cl. 46-206.000.

Terzian, Rouben T., to Glass, Marvin, & Associates. Inertia toy. 3,733,742, Cl. 46-202.000.

Tesico International, Ltd.: *See—*
McCray, Walter A., 3,734,454.

Tesla, narodni podnik: *See—*
Vavrinec, Bohyslav, 3,734,420.

Tessmann, Ottomar: *See—*
Erk, Amir; Tessmann, Ottomar; and Schirrich, Klaus, 3,734,395.

Tetters, Clarence O.: *See—*
Brooks, Paul, Jr.; and Tetters, Clarence O., 3,734,534.

Tewsley, Eric William: *See—*
Bliss-Hill, Herbert Brian; and Tewsley, Eric William, 3,733,855.

Texaco Experiment Incorporated: *See—*
Wolf, Robert L.; and McGann, Rodney, 3,733,826.

Texaco Inc.: *See—*
Knifton, John F., 3,734,964.
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,734,955.

Textron Inc.: *See—*
Casto, John P., 3,733,761.
Domaas, Perry M., 3,733,918.
Rice, Joseph A., 3,734,378.

Textron, Inc., mesne: *See—*
Conru, Harold Ward, 3,734,585.

Therm-O-Disc, Incorporated: *See—*
Bletz, Howard W., 3,735,319.

Thermo Electron Corporation: *See—*
Morgan, Dean T., 3,734,402.

Thiele, Werner: *See—*
Richter, Heinz; and Thiele, Werner, 3,735,236.

Thierman, Irwin B. Dental floss tooth cleaning tool. 3,734,107, Cl. 132-92.00a.

Thiermann, William E. Utility service trailer. 3,734,540, Cl. 280-482.000.

Thoma, Richard W.: *See—*
Ryu, Dewey Y.; Lee, Bong Kuk; and Thoma, Richard W., 3,734,830.

Thomas, Chas E., to Sparton Corporation. Method of forming an insulated feed-through seal. 3,734,995, Cl. 264-322.000.

Thomas, Edmond Joseph, to Bell Telephone Laboratories, Incorporated. Method for improving the settling time of a transversal filter adaptive echo canceller. 3,735,055, Cl. 179-170.200.

Thomas Industries Inc.: *See—*
Porter, David H.; Kemmerer, Wayne; and Bray, Douglas, 3,735,123.

Thomas, Johann, to Siemens Aktiengesellschaft. Method of determining the actual resistance value of an electrolytic cell. 3,734,841, Cl. 204-67.000.

Thomas, Malcolm H.: *See—*
Amneus, John S.; and Thomas, Malcolm H., 3,734,280.

Thomley, John W., to Thomley Static Control Systems, Inc. Electrostatic generator. 3,735,160, Cl. 310-6.000.

Thomley Static Control Systems, Inc.: *See—*
Thomley, John W., 3,735,160.

Thompson, Clifford E.: *See—*
Glesner, William K.; and Thompson, Clifford E., 3,734,990.

Thompson, Gerald F.; and Ridenour, Richard R., to Rapistan Incorporated. Warehouse apparatus and method with article label printing means. 3,734,311, Cl. 214-16.40a.

Thompson, William B.: *See—*
Jones, Rexford W.; and Thompson, William B., 3,734,729.
Jones, Rexford W.; and Thompson, William B., 3,734,730.
Jones, Rexford W.; and Thompson, William B., 3,734,731.
Jones, Rexford W.; and Thompson, William B., 3,734,732.

Thomson-CSF: *See—*
Coulon, Maurice, 3,735,180.
Rembault, Michel, 3,735,374.

Thor Power Tool Company: *See—*
Dudek, Edmund C., 3,734,515.

Thornbury, Vaclav Puta: *See—*
Swarbrick, John Atkinson; and Thornbury, Vaclav Puta, 3,735,315.

Thorngate, Robert E., to United States of America, Air Force. Safety locking device for airborne shockmounts. 3,734,444, Cl. 248-361.00r.

Thorsteinsson, John B. Carrier current relay. 3,735,316, Cl. 337-335.000.

Thrall Car Manufacturing Company: *See—*
Wagner, Ross W., 3,734,031.

Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Polymerization of conjugated diolefins. 3,734,900, Cl. 260-94.300.

Tiber Industries Inc.: *See—*
Jones, Charles A., 3,733,801.

Tice, Joseph. Article storing and recirculating device. 3,734,267, Cl. 198-30.000.

Tierney, Thomas W., to TWT Properties. Panel for concrete wall forms. 3,734,451, Cl. 249-192.000.

Timex Corporation: *See—*
Diersbock, Gunther Rudolph, 3,733,804.

Timian, Martin R. Renovator. 3,733,639, Cl. 15-304.000.

Timmer, Hendrikus Jacobus Maria: *See—*
Asberg, Sture Lennart; and Timmer, Hendrikus Jacobus Maria, 3,733,648.

Tirrell, James R., to Arrow-Hart, Inc. Insulating means for a jaw of a stab-mounted electrical meter or the like. 3,735,332, Cl. 339-217.00r.

Toepfer, Edwin F. Lock cylinder mechanism. 3,733,863, Cl. 70-363.000.

Tokico Ltd.: *See—*
Soya, Masahiro; Aizawa, Kensuke; and Hasegawa, Hiroaki, 3,733,896.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Itou, Moriyuki; and Aoba, Takashi, 3,734,449.
Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, 3,735,401.
Yoshimura, Kazuo, 3,735,054.

Tokyo Shibaura Electric Company, Ltd.: *See—*
Masui, Michio, 3,735,250.

Tommasini, Raffaele: *See—*
Ambrogi, Vittorio; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,734,910.

Tomono, Sumiharu: *See—*
Miyashita, Hirotoshi; Nishimura, Tomio; and Tomono, Sumiharu, 3,733,667.

Tomsa, Stanley J., to Motorola, Inc. In-band data transmission system. 3,735,048, Cl. 179-15.0bm.

Tomy Company, Inc.: *See—*
Saito, Makoto, 3,734,026.

Tonichi Manufacturing Co., Ltd.: *See—*
Tsuji, Hiroshi, 3,733,935.

Topolyansky, Yury Arnoldovich: *See—*
Alexandrov, Adolf Moritsovich; Isimbler, Yury Abramovich; Lachinov, Alexandr Alexandrovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; and Topolyansky, Yury Arnoldovich, 3,734,428.

Topper Corporation: *See—*
Avalear, Gary Powell, 3,733,705.

Torama, Tadashi: *See—*

Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,735,047.
Toray Industries, Inc.: *See—*
Kato, Tetsuya; Kidaka, Toshiaki; and Okagawa, Chikatsu, 3,734,986.
Torick, Emil: *See—*
Allen, Richard G.; and Torick, Emil, 3,735,275.
Torit Corporation, The: *See—*
Pierce, Leo A., 3,733,790.
Torosian, Mike: *See—*
Brown, Ced F., 3,734,775.
Touchette, Donat Pierre. Telescopic trailer. 3,734,559, Cl. 296-23.00c.
Touchman, William S.; and Hays, John D., to National Cash Register Company, The. Permanent magnet type torsional stepping motor. 3,735,165, Cl. 310-49.000.
Townsend Engineering Company: *See—*
Beasley, Donald L., 3,733,997.
Toyooki Kogyo Kabushiki Kaisha: *See—*
Sugimoto, Masashi, 3,733,971.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Uozumi, Sumio; and Ohnuma, Kiyoshi, 3,733,927.
Uozumi, Sumio; and Kirosawa, Kiochiro, 3,733,928.
Uozumi, Sumio; and Sakai, Ichio, 3,733,932.
Trabin, Sidney A. Back for a sofa. 3,733,624, Cl. 5-58.000.
Tracy, James E.: *See—*
Vona, Joseph A.; Holzman, Lawrence B.; and Tracy, James E., 3,734,879.
Traister, Robert L., to Xerox Corporation. Fuser control circuit for copying apparatus. 3,735,092, Cl. 219-501.000.
Trambarulo, Ralph Francis, to Bell Telephone Laboratories, Incorporated. Optical fiber connector. 3,734,594, Cl. 350-96.00b.
Trancon AB: *See—*
Flinth, Rune Nils Allan; Ahl, Nils Boran; Larsson, Lars Herbert; and Nordstrom, Kjell Helge, 3,734,217.
Trask, R. Pierce, II, to United States of America, Army. Back pressure sensitive switch for a flueric device. 3,734,116, Cl. 137-836.000.
Treff, Ernest H., to Harris-Intertype Corporation. Automatic ribbon associating apparatus. 3,734,487, Cl. 270-52.000.
Tricini, John D.; and Schmitt, Edward L., to Kerotest Manufacturing Corporation. Gate valve. 3,734,458, Cl. 251-267.000.
Trico Products Corporation: *See—*
Papadatos, Dionysios D.; Deibel, Raymond A.; and Riester, William C., 3,733,915.
Tricot, Jean Gaston. Cigarette gas lighter. 3,734,349, Cl. 222-3.000.
Trier, James J.; and Enz, John H. F., to Wood Industries, Inc. Magnetic support for flexible printing plate. 3,734,017, Cl. 101-378.000.
Tripp, Virgil P., to Interstate Sports Incorporated. Flexible control lever for mechanical devices. 3,733,922, Cl. 74-523.000.
Troughton, Thomas D., to Rheem Manufacturing Company. Apparatus for making food containers. 3,733,670, Cl. 29-200.00a.
Trouilhet, Maurice Marie Achille, to Calor. Steam-generating water-spraying flat iron. 3,733,725, Cl. 38-77.500.
Truck-Lite Co., Inc.: *See—*
Morrison, Charles R., 3,735,116.
Truman Smog Control Inc.: *See—*
Winningham, Truman, 3,733,787.
Trumbull, Harold E.: *See—*
Davis, Howard C.; Trumbull, Harold E.; and Cummings, Charles A., 3,734,607.
TRW Inc.: *See—*
Clifford, Richard P., 3,734,172.
Wuerker, Ralph Frederick; and Heflinger, Lee Opert, 3,735,283.
Trzyna, William A., to Zenith Radio Corporation. Excessive beam current indicator circuit. 3,735,039, Cl. 178-7.50r.
Tsai, Grigory; Perikov, Richard Fedorovich; Pak, Mikhail Stepanovich; Sultanov, Saidikarim; Grishenkov, German Ivanovich; and Shakirov, Kuchkarali Tulaganovich. Steering gear of four-wheel tractor. 3,734,227, Cl. 180-79.20r.
TSC Industries, Inc.: *See—*
Burenga, Thomas I.; and Elliott, Everett, 3,734,654.
Tshudy, Donald Richard, to RCA Corporation. Electrophoretic deposition of powdered material on an insulating support. 3,734,847, Cl. 204-181.000.
Tsuchiya, William Sadayuki; and Adams, Thomas Burton, Jr., to Deere & Company. Disk harrow with disk gangs spaced longitudinally and overlapped transversely to form a ridge-free center. 3,734,199, Cl. 172-551.000.
Tsuji, Hiroshi, to Tonichi Manufacturing Co., Ltd. Torque wrench with a nut runner. 3,733,935, Cl. 81-52.400.
Tubbs, Robert K., to Du Pont de Nemours, E. I., and Company. Irradiation of ethylene/vinyl acetate copolymers. 3,734,843, Cl. 204-159.140.
Tuchiya, Kiyoshi, to Nippon Electric Company, Limited. Operational circuit. 3,735,149, Cl. 307-230.000.
Tucker, Atlee Dee, Jr.; and David, Milton C. Traction system having interfitting tongue and notch traction panels. 3,734,088, Cl. 128-75.000.
Tucker, Carl: *See—*
Lee, Gary; and Tucker, Carl, 3,734,057.
Tugukuni, Hideyoshi: *See—*
Wakimoto, Saburo; Tugukuni, Hideyoshi; and Kano, Masafumi, 3,734,872.
Tuppo, Robert: *See—*
Greenwald, Harry; and Tuppo, Robert, 3,735,066.
Turner, Duncan: *See—*
Appleton, Arthur I.; Turner, Duncan; and Pastorel, Robert J., 3,735,078.
Turner, John Cameron, to Biorex Laboratories Limited. Glycyrrhetinic acid esters. 3,734,944, Cl. 260-468.500.
Turner, Phillip H., to Whirlpool Corporation. Auger ice maker with knife cracking device. 3,733,844, Cl. 62-320.000.
Turner, William D. Electronic musical instrument simulating chiff, trackery and dynamic keying. 3,735,014, Cl. 84-1.240.
Turpin, John N., to United States of America, Atomic Energy Commission. Skull-melting crucible. 3,735,010, Cl. 13-35.000.
Tuthill Pump Company: *See—*
Davies, Gilbert E.; Loubier, Robert J.; Weston, John M.; and Muhn, Robert A., 3,734,660.
Tuttle, Robert S.: *See—*
Osborne, Fred H.; Tuttle, Robert S.; and Corbett, Michael J., 3,734,512.
TWT Properties: *See—*
Tierney, Thomas W., 3,734,451.
Tyson, Clayton L.: *See—*
Eminger, Robert J.; and Tyson, Clayton L., 3,734,145.
Uelzmann, Heinz; and Maxey, Edwin M., to General Tire & Rubber Company, The. Load-bearing flexible polyurethane foams and method of making the same. 3,734,868, Cl. 260-2.5am.
Uemura, Saburo, to Sony Corporation. Motor control system. 3,735,216, Cl. 318-138.000.
Ueno Fine Chemical Industries, Ltd.: *See—*
Ueno, Ryuzo; Miyazaki, Tetsuya; Matsuda, Toshio; and Arai, Shinichiro, 3,734,748.
Ueno, Ryuzo; Miyazaki, Tetsuya; Matsuda, Toshio; and Arai, Shinichiro, to Ueno Fine Chemical Industries, Ltd. Method of preventing the spoilage of bread. 3,734,748, Cl. 99-150.00r.
Ueno, Ryuzo; and Kashihara, Motomu, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Process for the production of 4-(2-hydroxyethoxy) benzoic acid lower alkyl esters of high purity. 3,734,947, Cl. 260-473.00r.
Ugine Kuhlmann: *See—*
Roe, Rene Pierre Victor; Levavasseur, Andre Adolphe Rene; Sureau, Robert Frederic Michel; and Alicot, Marie-Josephe Jeanne, 3,734,905.
Ulderup, Jurgen: *See—*
Lange, Gunther; and Ulderup, Jurgen, 3,733,668.
Ulrich, Henri: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,734,844.
Ulseth, John W., to Minnesota Mining Manufacturing Company. Web tensioning support. 3,734,424, Cl. 242-75.400.
Underwood, Ralph H. Telescope mounting for guns. 3,734,437, Cl. 248-205.00r.
Union Carbide Corporation: *See—*
Chu, Nan S., 3,734,876.
Falk, Henry Joseph, 3,734,169.
Fietz, William A.; and Yenni, Donald M., 3,733,692.
Fisher, James G., Jr., 3,734,279.
Hauser, Charles Frank; and Lynn, John Wendell, 3,734,959.
Koleske, Joseph Victor; and Walter, Earl Richard, 3,734,979.
Kozak, Donald S.; and Miller, David P., 3,734,714.
Mandorf, Victor, Jr.; and Montgomery, Lionel C., 3,734,997.
von Dohlen, Werner Claus; and Batleman, Harvey Lionel, 3,734,878.
Union Oil Company: *See—*
Knutson, Gaylen M., 3,734,819.
United Aircraft Corporation: *See—*
Dixon, Thomas P., 3,734,642.
Games, John E.; and Casper, Clarence, Jr., 3,735,391.
Holzman, Allen L., 3,734,476.
Sandy, James J., Jr., 3,734,649.
Smith, Peter W., 3,735,291.
Walden, Ernest J.; and Allan, John W., 3,734,786.
Waters, James P., 3,735,031.
United Aircraft Products, Inc.: *See—*
De Groote, Raymond S., 3,734,168.
United Engineering and Foundry Company: *See—*
Shumaker, Charles Storer, 3,734,370.
United Kingdom Atomic Energy Authority: *See—*
Taylor, Roland, 3,733,792.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Studer, Robert Martin, 3,734,584.
United States of America
Agriculture: *See—*
Donaldson, Darrell J.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Beninate, John V., 3,734,684.
Kline, Leo; and Sugihara, Takashi F., 3,734,743.
Perrier, Dorothy M.; and Benerito, Ruth R., 3,734,685.
Air Force: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,735,146.
Brown, Donald G., 3,733,828.
Newburgh, Ronald G., 3,734,619.
Schwartz, Edward C., 3,735,404.
Sinnott, Norbert C.; and Jones, Harold A., Jr., 3,735,305.
Sletten, Carlyle J.; and Holt, F. Sheppard, 3,735,400.
Sletten, Caryle J.; and Holt, F. Sheppard, 3,735,399.

Thorngate, Robert E., 3,734,444.
White, Howard M., 3,734,348.

Army: *See—*
Bly, Vincent T., 3,735,137.
Ciccone, Thomas Q.; and Visnov, Martin, 3,734,020.
Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., 3,734,983.
Harpe, Ralph W.; and Schrader, Henry S., 3,734,613.
Kirshenbaum, Abraham D.; and Taylor, Francis R., 3,734,790.
Krugman, Saul; Giles, Joan P.; and Hammond, Jack, 3,735,004.
Rosenbluth, Murray, 3,735,414.
Sayles, David C., 3,734,895.
Sztankay, Zoltan G.; Holland, Richard J.; and Swirczynski, John P., 3,734,592.
Trask, R. Pierce, II, 3,734,116.
Wagner, Leo W., 3,735,359.
Young, John P.; and Ng, Wahling H., 3,734,792.

Army, mesne: *See—*
Blasch, Earl B.; Klingaman, Richard M.; and Page, Daniel M., 3,734,723.

Atomic Energy Commission: *See—*
Kolodney, Morris; and Arbiter, William, 3,734,690.
McRae, james; Van Dyke, Donald C.; and Yano, Yukio, 3,735,001.
Slagle, William L., 3,734,826.
Turpin, John N., 3,735,010.

Atomic Energy Commission, mesne: *See—*
Koerner, Richard J., 3,733,760.

Health, Education, Welfare: *See—*
Razdan, Raj Kumar; and Handrick, G. Richard, 3,734,930.

Interior, mesne: *See—*
Leonard, Richard L.; and Carey, Donald F., 3,734,989.

National Aeronautics and Space Administration: *See—*
Pesek, Clarence T., 3,735,206.

Navy: *See—*
Beaubien, Laurent A., 3,733,629.
Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., 3,734,863.
Buchanan, Chester L., 3,733,981.
Edwards, William R., 3,734,627.
Gill, George H., 3,735,227.
Harris, Robert W., 3,735,150.
Hightower, John D.; Conboy, Martin E.; and Phillips, Lawrence, 3,734,058.
Holt, Lloyd J.; Myers, Harry L.; and Zurn, Gordon F., Jr., 3,734,429.
Holub, George J., 3,735,270.
Kaufman, Martin H., 3,734,788.
Leibowitz, Lawrence M., 3,735,271.
McKenzie, Joe A.; and Engel, Charles E., 3,734,021.
Meeker, George W.; and Pertman, Allan E., 3,735,154.
Moy, Bertram K.; Mac Kenzie, Gerald L.; and Pisacane, Frank J., 3,734,789.
Nyswander, Rueben E., 3,735,272.
Phillips, T. H., 3,735,324.
Rentz, Albert W.; Jackson, Lloyd J.; Willard, Robert C.; and Burklund, Vernon D., 3,734,019.
Sampson, Henry T., 3,734,982.
Stimler, Morton, 3,735,140.
Strauss, George M., 3,735,288.
Whitnah, Richard G.; and Goldstein, Abe, 3,735,411.
Zanis, Charles A.; and Helferich, Richard L., 3,734,480.

Universal Metal Products, Inc.: *See—*
Williamson, Hugh C., 3,733,654.

Universal Oil Products Company: *See—*
Cyba, Henrik A.; and Sparks, Allen K., 3,734,758.
Neuzil, Richard W., 3,734,974.

Universal Water Corporation: *See—*
Windle, William K., 3,734,297.

University of California, The Regents of the: *See—*
Kolin, Alexander, 3,734,083.

University of Kentucky Research Foundation, The, mesne: *See—*
Hurst, George W.; and Colwell, William C., Jr., 3,735,023.

Uozumi, Sumio; and Ohnuma, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for an automatic transmission. 3,733,927, Cl. 74-753.000.

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Upjohn Company, The: *See—*
Hanze, Arthur R., 3,734,912.
Hester, Jackson B., Jr., 3,734,919.
Hester, Jackson B., Jr., 3,734,922.
Holm, James P., 3,734,663.
Porter, Lawrence C., 3,734,668.
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,734,844.

Urbanic, John M.; Fox, D. Marshall; and Panian, Frederick C., to Aluminum Company of America. Method of controlling the quality of seam welded product. 3,735,084, Cl. 219-67.000.

U.S. Fire Control Corporation: *See—*
Johnson, Wilfred V.; and Shea, Raymond E., 3,734,191.

U.S. Philips Corporation: *See—*
Auphan, Michel Joseph; and Perilhou, Jean Robert, 3,733,899.
Beun, Matthijs; and Reijnierse, Pieter, 3,735,349.
Bolt, Durk Jan; and Reitsma, Jogchum, 3,735,107.
Bolt, Durk Jan; and Reitsma, Jogchum, 3,735,108.
Bouwhuis, Gijsbertus; Haans, Petrus Franciscus Antonius; and Peek, Theodorus Hendrikus, 3,735,281.
Buchner, Robert Bertold; and Maat, Jan Philippus, 3,735,049.
De Groot, Jacob, 3,735,307.
Eibensteiner, Walter, 3,735,053.
Klopfer, Anton Martin; and Dittmer, Georg, 3,735,186.
Kreutzelman, Harm; and Verhoeven, Laurentius Maria, 3,735,070.
Kunert, Heinz-Peter, 3,735,218.
Landvogt, Gunther Friedrich, 3,733,890.
Nussbaum, Hans-Georg; and Von Osten, Reimer, 3,735,384.
Pawlak, Felix Romain, 3,735,285.
Peper, Jan, 3,735,178.
Rijswijk, Durk Dijkstra; Van Der Hoek, Willem; and Visser, Wim, 3,735,163.
Schroder, Jurgen; Von Osten, Reimer; Nussbaum, Hans-Georg; and Bartels, Ulrich, 3,735,385.
Severin, Petrus Johannes Wilhelmus, 3,735,254.
Van De Griend, Jan Maarten, 3,735,171.
Van Der Peet, Cornelis Johannes; and Ruiterkamp, Willem, 3,735,013.
Weidland, Willem Paul; and Vrijssen, Gerardus Arnoldus Herman Maria, 3,735,177.

Utken, Jay: *See—*
Bucklin, James B.; and Utken, Jay, 3,735,318.

Vacek, Lubomir C., to Sherwin-Williams Company, The. N-haloquinolinimides. 3,734,921, Cl. 260-295.50b.

Vaeth, Guenter: *See—*
Schnell, Georg; Stritzinger, Heinz; Vaeth, Guenter; Grau, Werner; Hammon, Fritz; and Hopp, Manfred, 3,734,772.

Vahlstrom, Richard E.; Nutten, Donald C.; Rennick, Lyle V.; Bayne, Dennis R.; and Oster, Stanley, to Northrop Corporation. Pulse analyzer. 3,735,261, Cl. 324-181.000.

Vaillancourt, Wilfred. Freighting frames for automobiles. 3,734,322, Cl. 214-450.000.

Valdez-Lefever Arctic Gas and Oil Transportation Corporation: *See—*
Lefever, Kenneth W., 3,734,136.

Valle, Thomas. Liquid-solid reaction apparatus. 3,734,475, Cl. 266-12.000.

Van Besauw, Jan Frans: *See—*
Poot, Albert Lucien; Van Besauw, Jan Frans; and Ghys, Theofiel Hubert, 3,734,733.

Van De Griend, Jan Maarten, to U.S. Philips Corporation. Flat commutator structure. 3,735,171, Cl. 310-235.000.

Van Der Hoek, Willem: *See—*
Rijswijk, Durk Dijkstra; Van Der Hoek, Willem; and Visser, Wim, 3,735,163.

Van Der Peet, Cornelis Johannes; deceased (by Mulkens, Casper Antonius Henricus; acting administrator); and Ruiterkamp, Willem, to U.S. Philips Corporation. System for producing an aperiodic vibrato signal. 3,735,013, Cl. 84-1.250.

Van Dest, Jean Claude, to Massey-Ferguson Inc. Hydraulic control valve. 3,734,129, Cl. 137-596.000.

Van Doorn, Donald W., to Lummus Industries, Inc. Process of wrapping and strapping bales of fibers. 3,733,769, Cl. 53-24.000.

Van Dyke, Donald C.: *See—*
McRae, james; Van Dyke, Donald C.; and Yano, Yukio, 3,735,001.

Van Mullekom, Hubert Peter, to N.V. Machinefabriek L. te Strake. Mechanism for preparing predetermined weft yarn lengths in a weaving machine. 3,734,141, Cl. 139-122.000.

Van Neil, Charles G.: *See—*
Punt, Vernon E.; Van Neil, Charles G.; and Hatzmann, John F., 3,735,040.

Vance, Lawrence T., to Engineered Products, Inc. Building construction assembly. 3,734,550, Cl. 287-189.36a.

Vane, Arthur B., to Varian Associates. Varactor tuned coaxial cavity negative resistance diode oscillator. 3,735,286, Cl. 331-101.000.

Vapor Corporation: *See—*
Heiress, Steven J., 3,735,322.

Varian Associates: *See—*
Briggs, Walton Ellis, 3,733,907.
Kabler, Donald J.; Gang, Robert E.; and Reeser, William O., Jr., 3,735,306.
Vane, Arthur B., 3,735,286.

Varrin, Andre J.; and McCarter, William L., to Pan American Enterprises. Valve with axial screw assembly. 3,734,456, Cl. 251-145.000.

Varsanyi, Denis; and Roth, Willy, to Ciba-Geigy Corporation. 2-Guanidino-4,6-bis-amino-s-triazines. 3,734,909, Cl. 260-249.600.

Vavrinec, Bohyslav, to Tesla, narodni podnik. Arrangement for driving of shuttleless coil winding machines of closed cores. 3,734,420, Cl. 242-4.00a.

Veb Pentacon Dresden Kamera-und Kinowerke: *See—*
Noack, Eolf; Kromer, Karl; and Hillmann, Paul, 3,733,990.

VEBA-Chemie Aktiengesellschaft: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,734,887.

Venendaal, Robert G.: *See—*
Reid, Edward A., Jr.; and Venendaal, Robert G., 3,734,065.

Venture Technology, Inc.: *See—*
Reinagel, Frederick G.; and Zumchak, Eugene M., 3,733,955.

Ver Steeg, David J.: *See—*
Rhudy, John S.; Fullinwider, James H.; and Ver Steeg, David J., 3,734,183.
Verbruggen, Herman Fernand: *See—*
Stievenart, Emile Frans; and Verbruggen, Herman Fernand, 3,733,992.
Vereinigte Flugtechnische Werke-Fokker GmbH: *See—*
Wolf, Konrad; and Barmbold, Hermann, 3,734,411.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Glanzer, Stefan, 3,734,055.
Veres, Frank, to Owens-Illinois, Inc. Glass sealing method. 3,734,702, Cl. 65-43.000.
Veres, Raymond M., to Port of New York Authority, The. Hydraulic system for trucks. 3,733,818, Cl. 60-422.000.
Verhoeven, Laurentius Maria: *See—*
Kreutzelman, Harm; and Verhoeven, Laurentius Maria, 3,735,070.
Viallet, Claude: *See—*
Bravi, Jean-Claude; Poulain, Claude; and Viallet, Claude, 3,734,845.
Vicari, Felix J.: *See—*
Natho, Paul J.; and Vicari, Felix J., 3,734,455.
Victor Company of Japan, Limited: *See—*
Yamazaki, Masami, 3,735,290.
Vingas, George J., to Pneu-Veyor, Inc. Pneumatic conveying system and apparatus. 3,734,569, Cl. 302-39.000.
Vischer, Alfred, Jr., to Vischer Products Company. Pressure cooker. 3,733,998, Cl. 99-330.000.
Vischer Products Company: *See—*
Vischer, Alfred, Jr., 3,733,998.
Visnov, Martin: *See—*
Ciccone, Thomas Q.; and Visnov, Martin, 3,734,020.
Visser, Wim: *See—*
Rijswijk, Durk Dijkstra; Van Der Hoek, Willem; and Visser, Wim, 3,735,163.
Vitt, Stanley P., Jr.: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 3,734,546.
Vlietstra, Jan, to N.V. Hollandse Signaalapparaten. Procedure for sealing waveguide nozzles. 3,733,694, Cl. 29-600.000.
Vogel, John A.: *See—*
Brown, William W.; Loose, Robert A.; and Vogel, John A., 3,734,823.
Vogel, Rudi Richard. Waste compacting apparatus. 3,734,005, Cl. 100-52.000.
Vogeli, Ernst, to Sulzer Brothers Limited. Valve arrangement having two valves in a common housing and use of the arrangemen in a vapor generating and utilizing plant. 3,734,134, Cl. 137-637.200.
Voigt, Hartmut: *See—*
Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen, 3,734,871.
Voit, J. M., GmbH: *See—*
Talasz, Johann, 3,734,671.
von Dohlen, Werner Claus; and Batleman, Harvey Lionel, to Union Carbide Corporation. Non-blocking ethylene copolymer composition. 3,734,878, Cl. 260-32.6pq.
Von Fischern, Bernhard: *See—*
Wick, Richard; Winkler, Alfred; and Von Fischern, Bernhard, 3,733,989.
Von Osten, Reimer: *See—*
Nussbaum, Hans-Georg; and Von Osten, Reimer, 3,735,384.
Schroder, Jurgen; Von Osten, Reimer; Nussbaum, Hans-Georg; and Bartels, Ulrich, 3,735,385.
Von Starck, Axel; and Pawlek, Franz, to AEG-Elotherm GmbH. Method of separating substances from a melt of good electrical conductivity. 3,734,720, Cl. 75-93.-00.
Vona, Joseph A.; Holzman, Lawrence B.; and Tracy, James E., to Celanese Corporation. Methylolated aminoplast molding resins and methods for preparing same. 3,734,879, Cl. 260-37.00n.
Vormbaum, Otto: *See—*
Werner, Hans; Koschinat, Baldur; and Vormbaum, Otto, 3,734,445.
Vorob, Arthur. Protective components for locks. 3,733,865, Cl. 70-370.000.
Voss, Peter: *See—*
Niederprum, Hans; and Voss, Peter, 3,734,962.
Vrijma, Berend, to Calsilox S.A. Method for cutting plastic material. 3,734,991, Cl. 264-157.000.
Vrijssen, Gerardus Arnoldus Herman Maria: *See—*
Weidland, Willem Paul; and Vrijssen, Gerardus Arnoldus Herman Maria, 3,735,177.
Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H.: *See—*
Bienert, Klaus; Lang, Winfried; and Nordt, Egon, 3,734,817.
Wada, Kazutoshi: *See—*
Kanebako, Hiroumu; and Wada, Kazutoshi, 3,734,513.
Wada, Takeshi; Kita, Hisanao; and Kitamura, Michi, to Hitachi, Ltd. Circumferential electroslag welding. 3,735,086, Cl. 219-73.000.
Wade, Robert M.: *See—*
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwick H., 3,735,025.
Wagenfeld, Gilbert B. Linear distance-speed-time computer. 3,735,100, Cl. 235-89.00r.
Wagman, N., & Company, Inc.: *See—*
Borghese, Marco, 3,734,105.
Wagner Electric Corporation: *See—*
Atkins, Carl E., 3,735,379.
Wagner, Joseph P. Thermostatically operated by-pass valve. 3,734,405, Cl. 236-34.500.
Wagner, Leo W., to United States of America, Army. Digital conference bridge. 3,735,359, Cl. 340-172.500.
Wagner, Ross W., to Thrall Car Manufacturing Company. Center beam railroad car. 3,734,031, Cl. 105-367.000.
Wakimoto, Saburo; Tugukuni, Hideyoshi; and Kano, Masafumi, to Dai Nippon Toryo Co., Ltd. and Sinloihi Co. Dispersion of finely divided pigment particles and process for preparation of the same. 3,734,872, Cl. 260-22.0cb.
Walden, Ernest J.; and Allan, John W., to United Aircraft Corporation. Solid propellants fabricated from a mixed polymer system. 3,734,786, Cl. 149-19.000.
Waldin, Vincent Howard, to Du Pont de Nemours, E. I., and Company. Process for removing articles from heat extraction devices. 3,733,839, Cl. 62-64.000.
Waldrup, William L.: *See—*
Price, Wayne E.; and Waldrup, William L., 3,734,323.
Walker, Edward R., Sr., to O'Brien, D. G., Inc. High-pressure and hermetic electrical feed-through apparatus. 3,735,024, Cl. 174-151.000.
Walker, Robert D.; Bazell, Seymour; Goldberg, Edward M.; and Ostensen, Ralph G., to MPC/KurgiSil and E. T. Manufacturing Co., Inc. Catheter tubes. 3,734,100, Cl. 128-351.000.
Wallace, James L., 50% to Butler, R. B., Inc. Drilling attachment. 3,734,204, Cl. 173-43.000.
Wallin, Gus Waldemar, to Scovill Manufacturing Company. Kitchen mixer impeller and mold for making. 3,734,643, Cl. 416-77.000.
Wally, Joseph H., Jr., to Western Blue Print Co. Vacuum film platen and condenser lens assembly for photo reproduction apparatus. 3,734,615, Cl. 355-76.000.
Walter, Earl Richard: *See—*
Koleske, Joseph Victor; and Walter, Earl Richard, 3,734,979.
Walter, Harvey J.: *See—*
Sauerwein, William D.; Meloni, Robert A.; and Walter, Harvey J., 3,734,459.
Walter, Robert L.; and Kelly, Earl L. Adjustable camshaft sprocket wheel. 3,734,073, Cl. 123-90.150.
Walters, Frank, to Ferranti Limited. Gaseous discharge display device with a layer of electrically resistive material. 3,735,183, Cl. 313-188.000.
Walworth Company: *See—*
Burger, Harry Fred, 3,734,461.
Wanlass, Frank M., to North American Rockwell Corporation. Multiple phase clock generator circuit. 3,735,277, Cl. 331-45.000.
Ward, Benjamin F., to Westvaco Corporation. Dicarboxylic acid soaps. 3,734,859, Cl. 252-108.000.
Ward, Geoffrey Marcus: *See—*
Jenkins, Elmer Thomas; and Ward, Geoffrey Marcus, 3,735,195.
Ward, George C.: *See—*
Chia, Enrique C.; Ward, George C.; and Lenaeus, George E., 3,734,162.
Warner & Swasey Company, The: *See—*
Dietrick, Eugene Lewis; and Linkus, Joseph Anthony, 3,733,944.
Warnick, Alan: *See—*
Kukla, Cassimer M.; and Warnick, Alan, 3,734,691.
Warpenburg, Norman L.: *See—*
Bowers, Russell E.; and Warpenburg, Norman L., 3,734,022.
Warren, Herbert G.; and Ragland, Ronald D., to Cardinal Petroleum Company. Method of locating oil gas field boundaries. 3,734,182, Cl. 166-254.000.
Wastl, Max E.; and Shirley, Richard L., to Lafayette Instrument Company, Inc. Projector for analytical viewing of moving pictures. 3,734,603, Cl. 352-169.000.
Watanabe, Hiroshi, to Asahi-Dow Limited. Heat-shrinking package using foamed plastic sheet. 3,734,273, Cl. 206-46.0fc.
Waterman, Neil S.; and Lachowicz, Stanley F., to Atlantic Design & Development Corporation. Collapsible tube metering closure. 3,734,350, Cl. 222-92.000.
Waterman, Neil S., to Atlantic Design & Development Corporation. Liquid container dispensing closure. 3,734,359, Cl. 222-484.000.
Waters, James P., to United Aircraft Corporation. Three-dimensional image display system. 3,735,031, Cl. 178-6.500.
Watson, Thorpe E.; Parsons, David V.; and Wild, Arthur W., to Comin-co Ltd. Zinc forging alloy. 3,734,785, Cl. 148-11.50r.
Wauters, Ronald P.: *See—*
Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,734,745.
Weaver, Donald F. Liquid pressure conditioner. 3,734,126, Cl. 137-512.150.
Webb, Jervis B., International Company: *See—*
Benner, Jean-Rene; Dop, Pierre; and Caron, Marcel, 3,735,300.
Weber, Mark. Apparatus for blood test. 3,734,079, Cl. 128-2.00g.
Weber, Richard H.: *See—*
Linn, Wallace L.; Kilmer, Bill G.; and Weber, Richard H., 3,735,164.
Weber, Rudolf: *See—*
Kaiser, Paul; and Weber, Rudolf, 3,734,023.
Webster, David O.: *See—*
Menard, Edward A.; and Webster, David O., 3,734,869.
Wedag Westfalia Dinnendahl Groppel Aktiengesellschaft: *See—*
Jager, Heinz, 3,734,287.

Weeden, Robert G., to Anthes Equipment Limited. Wire wall partition. 3,734,467, Cl. 256-65.000.

Wehr Corporation: *See—*
Dravnieks, Konstantins, 3,733,791.

Weidland, Willem Paul; and Vrijssen, Gerardus Arnoldus Herman Maria, to U.S. Philips Corporation. Camera tube having a photoconductive targetplate and luminescent surface on electrode for fixing dark current. 3,735,177, Cl. 313-65.00a.

Weigel, Horst; Wilbertz, Otto; Manshausen, Theo; and Kryczun, Alfred, to Klockner-Humboldt-Deutz Aktiengesellschaft. Device for crushing hot furnace discharge material, particularly hot alumina. 3,734,414, Cl. 241-40.000.

Weighart, Frederick G., to Automation Industries, Inc. Gating systems used with nondestructive material testers and the like. 3,733,891, Cl. 73-67.900.

Weikel, Walter J.: *See—*
Kendall, Frank T.; Pierce, Donald L.; and Weikel, Walter J., 3,735,093.

Weinert, Volker: *See—*
Knapp, Walter; Weinert, Volker; and Ramsauer, Kurt, 3,734,611.

Weintraub, Arthur; Cook, Wendell A.; Gatwood, Robert K.; and De Brosse, Kenneth L., to International Telephone and Telegraph Corporation. Tire pressure measurment system. 3,735,344, Cl. 340-58.000.

Weir, Donald Robert: *See—*
Seibt, Willie; and Weir, Donald Robert, 3,734,721.

Welding Research, Inc.: *See—*
Sciaky, David, 3,735,089.

Welsh, Thomas G.: *See—*
Killmeyer, William S., 3,733,862.

Welty, Roger A., to Welty-Way Products, Inc. Method and apparatus for forming sheet material. 3,733,868, Cl. 72-181.000.

Welty-Way Products, Inc.: *See—*
Welty, Roger A., 3,733,868.

Wendorff, Hans H.: *See—*
Ahrens, Erhard; Prill, Christian; and Wendorff, Hans H., 3,735,334.

Wendt, Gerhard R.; Clark, Donald E.; and Grant, Norman H., to American Home Products Corporation. 6-(1-Aminothiocycloalkanoyl amino) penicillanic acids. 3,734,904, Cl. 260- 239.100.

Werner, Hans; Koschinat, Baldur; and Vormbaum, Otto. Rectractable pivot bolt arrangement. 3,734,445, Cl. 248-361.000.

Wertheimer, Harry P.: *See—*
Marscher, William D.; and Wertheimer, Harry P., 3,735,323.

Wertli, Alfred. Apparatus for continuously casting tubes. 3,734,166, Cl. 164-283.000.

Wessel, Otto, to Mannesmann Aktiengesellschaft. Method of making strips or tape from small particles. 3,733,678, Cl. 29-420.000.

West, James C.: *See—*
Finelli, Anthony F.; and West, James C., 3,734,894.

Western Blue Print Co.: *See—*
Wally, Joseph H., Jr., 3,734,615.

Western Electric Company, Incorporated: *See—*
Bohannon, William D., Jr.; and Church, Hoye D., 3,733,672.
Cranston, Benjamin Howell, 3,733,684.

Westinghouse Air Brake Company: *See—*
Coccia, Rudolph A., 3,734,571.
Heiple, Danforth Kingsbury; Hillman, Danny Lee; Orth, Edward George; and Stueve, Paul Joseph, 3,734,576.
Schantz, Ronald K., 3,733,964.

Westinghouse Brake and Signal Company: *See—*
Paginton, Philip Norman, 3,734,575.

Westinghouse Electric Corporation: *See—*
Brown, William W.; Loose, Robert A.; and Vogel, John A., 3,734,823.
Burney, Ivan T., 3,733,783.
Davies, Norman, 3,735,073.
Goetze, Gerhard W.; and Beyer, Rolf R., 3,735,032.
Grunert, Kurt A.; Conner, John P.; and Dauer, John J., Jr., 3,735,295.
Hess, Robert L.; and Frakes, James H., 3,735,019.
Kilgore, Lee A.; Strait, Bernard S., Jr.; and Whitney, Eugene C., 3,735,217.
Le Breton, Albert F., 3,734,581.
Livera, Phillip A., 3,734,658.
Pittner, John R., 3,735,226.

Weston, John M.: *See—*
Davies, Gilbert E.; Loubier, Robert J.; Weston, John M.; and Muhn, Robert A., 3,734,660.

Westvaco Corporation: *See—*
Ward, Benjamin F., 3,734,859.

Weyerhaeuser Company: *See—*
Miller, Lewis S., 3,734,764.

Whannel, Ralph E.: *See—*
Marsh, Richard P.; Whannel, Ralph E.; and Basso, Julius C., 3,734,452.

Wheelabrator Corporation, The: *See—*
Johnson, Roger A., 3,733,752.

Whetham, William J., to Boeing Company, The. Temperature compensation for magnetic milling force sensors. 3,735,157, Cl. 307-304.000.

Whirlpool Corporation: *See—*
Turner, Phillip H., 3,733,844.

White, Howard M., to United States of America, Air Force. Method of expelling liquid propellant from a storage tank in a liquid rocket. 3,734,348, Cl. 222-1.000.

Whitfield, Carroll J., to Kelley Manufacturing Company. Peanut shaker dirt remover. 3,734,194, Cl. 171-101.000.

Whitfield, Fred Sparks, to Millhaven Fibres Limited. Method and a simple apparatus therefor to efficiently dispose of liquid wastes containing combustible carbonaceous material. 3,734,035, Cl. 110-7.00r.

Whitnah, Richard G.; and Goldstein, Abe, to United States of America, Navy. High-range resolution radar real-time display apparatus. 3,735,411, Cl. 343-17.20r.

Whitney, Eugene C.: *See—*
Kilgore, Lee A.; Strait, Bernard S., Jr.; and Whitney, Eugene C., 3,735,217.

Whitney, John A.; and Sorensen, Peter F., to Franklin Electric Co., Inc. Change detector system. 3,735,347, Cl. 340-146.200.

Whitney, Thomas A.: *See—*
Langer, Arthur W., Jr.; and Whitney, Thomas A., 3,734,963.

Whittaker Corporation: *See—*
Nist, Donald E.; and Quartz, Jay H., 3,734,495.

Wick, Richard; Winkler, Alfred; and Von Fischern, Bernhard, to Agfa-Gevaert Aktiengesellschaft. Automatic focusing arrangement. 3,733,989, Cl. 95-44.00c.

Wickersheimer, Jack C., to Allis, Lewis, Company, The. Speed sensor for mechanical adjustable speed drive. 3,735,167, Cl. 310-168.000.

Wickham, William T.; Brown, Frank; Kleykamp, Donald L.; and Kosuth, Otto. Method of making a vacuum cleaner hose assembly. 3,733,697, Cl. 29-628.000.

Widess, Moses B., to Amoco-Production Company. Minimizing multiple reflecting. 3,735,337, Cl. 340-15.5td.

Wiegand, William A. Water saver attachment for toilet tank flush valve. 3,733,618, Cl. 4-51.00r.

Wilbertz, Otto: *See—*
Weigel, Horst; Wilbertz, Otto; Manshausen, Theo; and Kryczun, Alfred, 3,734,414.

Wilcox, Gale F.: *See—*
Ormiston, Robert B.; and Wilcox, Gale F., 3,734,590.

Wild, Arthur W.: *See—*
Watson, Thorpe E.; Parsons, David V.; and Wild, Arthur W., 3,734,785.

Wilderman, Giles H., to Kenting Drilling, Ltd. Carrier mounted drilling unit. 3,734,210, Cl. 175-85.000.

Wiles, David M.; and Suprunchuk, Tony, to Canadian Patents and Development Limited. Thiocarbohydrazone fungicides. 3,734,757, Cl. 106-186.000.

Wiley, Bruce F., to Phillips Petroleum Company. Sonic logging apparatus. 3,734,233, Cl. 181-.5ag.

Wilhart, Helmut: *See—*
Hamilton, Billy Harold; and Wilhart, Helmut, 3,735,235.

Wilhelm, Frederick R.: *See—*
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Rosen, Samuel R.; Scarsborough, Don R.; and Wilhelm, Frederick R., 3,734,406.

Wilkinson, Terry E.: *See—*
Helliker, Conrad Dean; and Wilkinson, Terry E., 3,735,342.

Will, Gunther B. G. P. Method of producing porous polymerizates from water-in-oil emulsions. 3,734,867, Cl. 260-2.50r.

Willard, Robert C.: *See—*
Rentz, Albert W.; Jackson, Lloyd J.; Willard, Robert C.; and Burklund, Vernon D., 3,734,019.

Williams, Bert B., to Esso Production Research Company. Method for acidizing subterranean formations. 3,734,186, Cl. 166-282.000.

Williams, Edgar L., Jr. Portable electric flashlight. 3,735,119, Cl. 240-10.60r.

Williams, Glynn P.: *See—*
Abrams, Harold B.; Haynes, Benjamin O.; and Williams, Glynn P., 3,735,366.

Williams, Joel L.; and Stannett, Vivian T. Stopcock-joint assembly. 3,734,127, Cl. 137-583.000.

Williams, Laurence Lyman: *See—*
Coscia, Anthony Thomas; and Williams, Laurence Lyman, 3,734,977.

Williams, Patrick Robert, to Temtool Pty., Limited. Method of and apparatus for sharpening small hand tools. 3,733,751, Cl. 51-3.000.

Williams, Richard M., to Burroughs Corporation. Document encoding apparatus. 3,734,011, Cl. 101-91.000.

Williamson, Harry, Jr. Apparatus for processing a bed of fluidized solids. 3,733,713, Cl. 34-57.00a.

Williamson, Hugh C., to Universal Metal Products, Inc. Hose clamp. 3,733,654, Cl. 24-20.0tt.

Willis, Frederick Gordon, Jr., 30% to Birch, Richard J. Electromagnetically actuated artificial heart. 3,733,616, Cl. 3-1.000.

Willy, Glenn R., to Standard Pressed Steel Co. Collar assembly for use with a rivet. 3,733,958, Cl. 85-37.000.

Wilms, Karl-Heinz, to Optische Werke G. Rodenstock. Slit lamp. 3,735,125, Cl. 240-413.000.

Wilson, David A.: *See—*
Moody, Robert E.; and Wilson, David A., 3,734,621.

Wilson, Geoffrey: *See—*
Foster, John; and Wilson, Geoffrey, 3,733,884.

Wilt, Ted. Suitcase divider. 3,734,249, Cl. 190-41.00b.

Winckles, Harvey T.: *See—*
Hillman, Arnold R.; and Winckles, Harvey T., 3,734,507.

Windle, William K., to Universal Water Corporation. Module for reverse osmosis apparatus. 3,734,297, Cl. 210-321.000.

Windmoller & Holscher: *See—*
Schmedding, Herbert; and Helbig, Helmut, 3,734,849.

Winkler, Alfred: *See—*
Wick, Richard; Winkler, Alfred; and Von Fischern, Bernhard, 3,733,989.

Winningham, Truman, to Truman Smog Control Inc. Method, apparatus and systems for separating particulate matter from gases laden therewith and accumulating the particulate matter. 3,733,787, Cl. 55-228.000.

Wintz, Donald E., to Aladdon Manufacturing Company. Beverage container receptacle and clamp. 3,734,439, Cl. 248-224.000.

Wirchansky, Anastasia C.: *See—*
Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,734,745.

Wirt, Leslie S., to Lockheed Aircraft Corporation. Sound absorption structure. 3,734,234, Cl. 181-33.00g.

Wirtz, Rainer: *See—*
Renner, Stefan; Bayha, Wulf; Burgholte, Alwin; Schweizer, Holger; and Wirtz, Rainer, 3,735,220.

Wisconsin Alumni Research Foundation: *See—*
Larsen, Edwin M.; and Gil-Arnao, Francisco C., 3,734,689.

Wiser, Joseph E.: *See—*
Chestnut, Benjamin F.; and Wiser, Joseph E., 3,735,062.

Wisniewski, Jules, to Simmonds Precision Products, Inc. Electric motor construction. 3,735,173, Cl. 310-242.000.

Wisser, Otto, to Jahresuhren-Fabrik GmbH. Alarm device. 3,733,802, Cl. 58-16.500.

Witco Chemical Corporation: *See—*
Barker, Graham; and Gordon, Ronald H., 3,734,858.

Wittmann, Christoph J., to Darlington Fabrics Corporation. Warp knit elastic fabric. 3,733,859, Cl. 66-193.000.

Wolber, Robert; King, Josef; and Kern, Eckhart, to Gebruder Junghans G.m.b.H. Device for the precision adjustment of a balance. 3,733,808, Cl. 58-112.000.

Wolber, William G., to Bendix Corporation, The. Interferometer utilizing a tunable laser or similar frequency variable wave energy generator. 3,734,623, Cl. 356-110.000.

Wold, Leslie D.: *See—*
Bender, Herman G.; Page, Robert N.; and Wold, Leslie D., 3,734,099.

Wolf, Konrad; and Barmbold, Hermann, to Vereinigte Flugtechnische Werke-Fokker GmbH. Air brake for jets. 3,734,411, Cl. 239-265.290.

Wolf, Milton: *See—*
Diebold, James L.; Sanet, Joel S.; and Wolf, Milton, 3,734,903.
Diebold, James L.; and Wolf, Milton, 3,734,906.

Wolf, Robert L.; and McGann, Rodney, to Texaco Experiment Incorporated. Fuel cooled ram air reaction propulsion engine. 3,733,826, Cl. 60-263.000.

Wolf, Walter A.; and Corn, Prentice R., to Switches Incorporated. Seat sensing mechanism. 3,735,380, Cl. 340-278.000.

Wolken-Mohlmann, Helmut: *See—*
Hanenkamp, Horst; and Wolken-Mohlmann, Helmut, 3,735,304.

Wood Industries, Inc.: *See—*
Trier, James J.; and Enz, John H. F., 3,734,017.

Wood, Richard P.: *See—*
Davis, Carlton J., Sr.; Wood, Richard P.; and Miller, Everett R., 3,734,814.

Wood, Thomas E. Pack frame. 3,734,366, Cl. 224-25.00a.

Wood, William Robert; and Burrough, Donald E., to Deere & Company. Header having harvester reel with tangle-preventing filler plates thereon. 3,733,796, Cl. 56-220.000.

Woodward, Oakley McDonald, to RCA Corporation. Multifrequency antenna system including an isolation section open circuited at both ends. 3,735,413, Cl. 343-730.000.

Worthington, Stanley W. Apparatus for controlling direction of movement of refuse body compacting and unloading blade. 3,734,316, Cl. 214-82.000.

Wright, Alan Carl: *See—*
Schaefer, Frederic Charles; and Wright, Alan Carl, 3,734,939.

Wright, Allen C., to Haws Drinking Fountain Company. Vandal-proof drinking fountain. 3,734,408, Cl. 239-29.000.

Wright, Donald J.; and Fisher, Gerald E. Offset signal correction system. 3,735,273, Cl. 328-163.000.

Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, to American Cyanamid Company. N-[2-(4 Phenyl-1-piperazinyl)alkyl]benzo [b]thiophene or benzofuran 2-carboxamides. 3,734,915, Cl. 260-268.0ft.

Wright, William Blythe, Jr.; and Brabander, Herbert Joseph, to American Cyanamid Company. N-(tert-amino alkyl)-2-indenecarboxamides and methods of preparing the same. 3,734,916, Cl. 260-268.0bc.

Wuerker, Ralph Frederick; and Heflinger, Lee Opert, to TRW Inc. Beam diameter control for P laser having improved coherence. 3,735,283, Cl. 331-94.500.

Wulff, Rafael T.: *See—*
Christensen, Frank G.; and Wulff, Rafael T., 3,734,219.

Wurlitzer Company, The: *See—*
Osborne, Fred H.; Tuttle, Robert S.; and Corbett, Michael J., 3,734,512.

Wyeth, William Albert: *See—*
Eastcott, Peter de Hertel; Messervey, William Albert; and Wyeth, William Albert, 3,734,257.

Wyland, Alvin D., to General Electric Company. Electrically energizable control system for a fuel burner. 3,734,676, Cl. 431-79.000.

Wyss, Clement R.: *See—*
Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,734,745.
Culpepper, George O., Jr.; and Wyss, Clement R., 3,734,774.

Xerox Corporation: *See—*
Camis, Thomas; and Goss, Steven A., 3,734,015.
Davis, Howard C.; Trumbull, Harold E.; and Cummings, Charles A., 3,734,607.
O'Connell, Richard P.; and Zucker, Edwin, 3,734,610.
Punt, Vernon E.; Van Neil, Charles G.; and Hatzmann, John F., 3,735,040.
Reithmeier, Alton F.; and Fahey, Frank R., 3,735,043.
Traister, Robert L., 3,735,092.

Xonics Inc.: *See—*
Balser, Martin; Nagy, Arthur E.; and Proudian, Andrew P., 3,735,333.

Yagi, Motohiko, to Jufi Photo Film Co., Inc. Sheathed electrical resistance heating element. 3,735,328, Cl. 338-270.000.

Yamada, Harumi, to Koyo Lindberg Hevi-Duty Company. Apparatus for feeding articles at constant rate. 3,734,355, Cl. 222-167.000.

Yamamoto, Hiroshi; Okuda, Kuniteru; and Nomoto, Hiroaki, to Oval Engineering Co., Ltd. Flow conditioning apparatus. 3,733,898, Cl. 73-198.000.

Yamamoto, Osamu, to Kawaguchi Shoichi. Electric can opener. 3,733,698, Cl. 30-4.00r.

Yamamoto, Yukitsune: *See—*
Sakato, Yajiro; Ina, Kazuo; Yamamoto, Yukitsune; and Morishita, Harumi, 3,734,932.

Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Device for firing flashlamps in camera. 3,733,987, Cl. 95-11.50r.

Yamanaka, Tsuneo: *See—*
Sakano, Nozomu; Yamanaka, Tsuneo; Shibagaki, Kumekichi; and Kawabe, Katsumi, 3,735,401.

Yamanishi, Isamu: *See—*
Murayama, Yoshinobu; Morimoto, Tadashi; Kinoshita, Mikio; and Yamanishi, Isamu, 3,733,912.

Yamazaki, Masami, to Victor Company of Japan, Limited. Compressing and/or expanding system comprising fixed and variable frequency characteristic changing circuits. 3,735,290, Cl. 333-14.000.

Yamda, Shoji. Fuel control means for a model engine. 3,734,072, Cl. 123-73.00a.

Yanaga, Makoto; and Shimojo, Takemi, to Alps Electric Co., Ltd. Push-button switch with resilient conductive contact member and with helical conductive networks. 3,735,068, Cl. 200-159.00b.

Yanikoshi, Florian F., to Sigma Instruments, Inc. Stepping motor with automatic brake. 3,734,254, Cl. 192-16.000.

Yano, Yukio: *See—*
McRae, james; Van Dyke, Donald C.; and Yano, Yukio, 3,735,001.

Yasui, Yukio; Ikoga, Wataru; Mori, Akihiko; and Adachi, Tadaaki, to Kewpie Jyozo Kabushiki Kaisha. Process for continuous production of vinegar by surface fermentation. 3,734,746, Cl. 99-147.000.

Yata, Kotaro, to Minolta Camera Kabushiki Kaisha. Exposure control systems for single reflex cameras having a detachable housing. 3,733,984, Cl. 95-10.0ct.

Yates, John; and Devlin, Barry R. J., to Shell Oil Company. Herbicidal composition and method. 3,734,711, Cl. 71-118.000.

Yates, Michael Harold John, to Marconi Company Limited, The. Data processing arrangements having convertible majority decision voting. 3,735,356, Cl. 340-172.500.

Yazawa, Masahide, to Polymer Processing Research Institute Ltd. and Nippon Petrochemicals Co., Ltd. Laminate product of crossed stretched tapes having perforations for air permeation and method for preparing the same. 3,734,812, Cl. 161-57.000.

Yenni, Donald M.: *See—*
Fietz, William A.; and Yenni, Donald M., 3,733,692.

Yevick, George J., to Personal Communications, Inc. Mechanical optical scanner. 3,734,605, Cl. 353-30.000.

Yingst, Thomas O., to Polyvend, Inc. Lock blocking device for vending machine closures. 3,734,346, Cl. 221-101.000.

York, William C., to Eastman Kodak Company. Developed image transfer. 3,734,724, Cl. 96-1.400.

Yoshida, Makoto: *See—*
Hiraga, Michio; and Yoshida, Makoto, 3,733,803.

Yoshida, Mikihiko: *See—*
Hijiya, Hiromi; and Yoshida, Mikihiko, 3,734,760.

Yoshii, Takashi: *See—*
Kobayakawa, Masaki; and Yoshii, Takashi, 3,735,181.

Yoshimura, Kazuo, to Tokyo Shibaura Electric Co., Ltd. Tape recorder-operating device with automatic exchange from rewind or quick feed to reproduction by sensing nonrecorded section. 3,735,054, Cl. 179-100.20s.

Yoshioka, Tomonori: *See—*
Iwabuchi, Kasuo; and Yoshioka, Tomonori, 3,735,395.

Young, Einar T., to Sun Oil Company. Gasoline dispensing nozzle. 3,734,339, Cl. 222-56.000.

Young, Fred M.; and Jones, Ronald E., to Young Radiator Company. Heat-exchange core assembly machine. 3,733,673, Cl. 29-202.00r.

Young, George W., to American Air Filter Company, Inc. Filter latch. 3,733,793, Cl. 55-493.000.

Young, Joe W.: *See—*

Kossoff, Joseph; Liedtke, Ronald R.; and Young, Joe W., 3,733,743.
Young, John P.; and Ng, Wahling H., to United States of America, Army. Method for retarding the decomposition of hydrazine rocket fuels in contact with maraging steels. 3,734,792, Cl. 149-36.000.
Young, John R.; and McElwain, John C., to North American Rockwell Corporation. Shielded angular drive transmitting joint and shielded quickly detachable coupling thereof. 3,733,854, Cl. 64-32.000.
Young Radiator Company: *See—*
Christensen, Donald W., 3,734,175.
Young, Fred M.; and Jones, Ronald E., 3,733,673.
Young, Roland L.: *See—*
Hug, Leonard F.; Grossman, Phillip A.; Young, Roland L.; and Stark, Robert E., 3,734,778.
Zachariae, Barbara L.: *See—*
Johnson, Lu Wanna M.; and Zachariae, Barbara L., 3,733,852.
Zadig, Ernest A. Testing apparatus for selectively controlled equipment. 3,735,381, Cl. 340-279.000.
Zaffaroni, Alejandro, to Alza Corporation. Therapeutic adhesive tape. 3,734,097, Cl. 128-268.000.
Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Composite thermoplastic structure. 3,734,139, Cl. 138-146.000.
Zahn, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic copying apparatus. 3,734,614, Cl. 355-67.000.
Zanis, Charles A.; and Helferich, Richard L., to United States of America, Navy. Lamellar crucible for induction melting titanium. 3,734,480, Cl. 266-39.000.
Zanoni, Paul; and Shunta, Richard F., to Bennett Pump Incorporated. Staged throttling float valve. 3,734,124, Cl. 137-430.000.
Zaun, Richard David, to Deere & Company. Rotary hoe. 3,734,201, Cl. 172-551.000.
Zax, Grigory Iosifovich: *See—*
Duchinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikoli Ivanovich; and Grachev, Leonid Pavlovich, 3,733,774.
Zehrung, Claude D., Jr., to Rental Equipment Manufacturing Company. Knife structure for a knife reel. 3,734,197, Cl. 172-21.000.
Zeiss-Stiftung, Carl, d/b/a Zeiss, Carl: *See—*
Schafer, Fritz Peter; and Schmidt, Werner, 3,735,278.
Zeitlin, Richard A., to Autolectron Corporation. Embossment reader. 3,735,097, Cl. 235-61.11f.
Zellweger AG: *See—*
Barnhardt, Robert W.; and Grubbs, William J., 3,733,906.
Zenith Radio Corporation: *See—*
Dietch, Leonard, 3,733,976.
Kachel, Irwin, 3,734,728.
Kaplan, Sam H., 3,735,179.
Karlovics, Steven, 3,735,189.
Kun, Zoltan K., 3,735,212.
Trzyna, William A., 3,735,039.
Zenos, Stevens. Continuous food cooking device. 3,734,740, Cl. 99-1.000.
Zentz, Robert J.; and Stuttler, Robert A., to Sundstrand Corporation. Hydromechanical transmission. 3,733,924, Cl. 74-687.000.
Zepp, Philip H., to Hoover Company, The. Methods of and apparatus for transferring bodies. 3,734,314, Cl. 214-38.00r.
Zerbe, James J. Pollutant recovery system. 3,734,294, Cl. 210-242.000.
Zeta Research, Inc.: *See—*
Tarczy-Hornoch, Zoltan, 3,735,389.
Ziegler, Max, to Heraeus, W. C., GmbH. Process for the quantitative recovery of gold from aqueous solutions. 3,734,722, Cl. 75-118.000.
Ziener, Otto, to Lackstone, Allan John and Handelman, Adele. Meat processing and separating apparatus. 3,734,000, Cl. 99-539.000.
Zieringer, Rudolf, to List, Hans. Method for the manufacture of a piezoelectric transducer and transducer manufactured by the method. 3,733,661, Cl. 29-25.350.
Zifka, Donald K.: *See—*
Lynch, Peter D.; Oldfield, Dempsey R.; and Zifka, Donald K., 3,734,324.
Zimmer, Gerhard; and Stein, Hermann. Aerosol hair-setting composition comprising an interpolymer of an N-3-oxoalkylamide and α,β-unsaturated aliphatic acid. 3,735,003, Cl. 424-47.000.
Zimmerman, D. W., Mfg., Inc.: *See—*
Stone, Charles W., 3,734,325.
Zimmerman, Eli. Toothbrush mouthwash rinser kit. 3,734,106, Cl. 132-79.000.
Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung: *See—*
Roethke, Ernst, 3,733,799.
Zivanovic, Srbislav V.: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,735,146.
Zlupko, John E.: *See—*
Frind, Gerhard; Korte, Richard M.; and Zlupko, John E., 3,735,074.
Zschocke, Albrecht: *See—*
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,734,712.
Zucker, Edwin: *See—*
O'Connell, Richard P.; and Zucker, Edwin, 3,734,610.
Zumchak, Eugene M.: *See—*
Reinagel, Frederick G.; and Zumchak, Eugene M., 3,733,955.
Zurn, Gordon F., Jr.: *See—*
Holt, Lloyd J.; Myers, Harry L.; and Zurn, Gordon F., Jr., 3,734,429.
Zvl Vyzkumny ustav pro Valiva loziska: *See—*
Hosnedl, Vaclav; Rajisigl, Zdenek; Rathusky, Jiri; Prokopec, Miroslav; and Mladek, Milos, 3,734,583.

LIST OF PLANT PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF MAY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,340, 5–22–73, Cl. 19.

Armstrong Nurseries, Inc.: *See*—
Armstrong, David L. 3,340.

Bosley, Paul R. Pieris Japonica. 3,339, 5–22–73, Cl. 54.

Duffett, William E.: *See*—
Nishimoto, Yoshio, Jessel, and Duffett. 3,343.

Jessel, Walter H., Jr.: *See*—
Nishimoto, Yoshio, Jessel, and Duffett. 3,343.

Lewis, Helen H.: *See*—
Lewis, Hubert B. and H. H. 3,338.

Lewis, Hubert B. and H. H. Azalea plant. 3,338, 5–22–73, Cl. 56.

Nishimoto, Yoshio: *See*—
Nishimoto, Yoshio, Jessel, and Duffett. 3,343.

Nishimoto, Yoshio, W. H. Jessel, Jr., and W. E. Duffett, to Yoshio Nishimoto. Chrysanthemum plant. 3,343, 5–22–73, Cl. 78.

Pratt, Wilfred A. Peach tree. 3,342, 5–22–73, Cl. 43.

Quinn, Vincent P. Carnation plant. 3,341, 5–22–73, Cl. 70.

LIST OF DESIGN PATENTEES

Albertson, Robert V., to Massey-Ferguson Inc. Water vehicle. 226,988, 5–22–73, Cl. D71—1.

Angelakos, Nicholas P., to Lancaster Colony Corp. Coaster. 226,963, 5–22–73, Cl. 44—10.

Arai, Toshikatso, to Tomy Kogyo Co., Ltd. Toy trackway. 226,957, 5–22–73, Cl. D34—15.

Benty, John L., and D. Defano, to Clairol Inc. Electric skin hygiene brush. 226,941, 5–22–73, Cl. D4—14.

Bobrowski, Louis G., to The Stanley Works. Door chain lock. 226,944, 5–22–73, Cl. D8—131.

Boyd, James D. Candle holder. 226,970, 5–22–73, Cl. D48—2.

Bradley, Donald W. Combined fluid dispenser and cabinet therefor. 226,994, 5–22–73, Cl. D94—3.

Bridges, Roy G. Toothbrush container. 226,992, 5–22–73, Cl. D87—1.

Brindisi, Frederick J., to Qualitrol Corp. Pressure relief valve. 226,952, 5–22–73, Cl. D23—19.

Burkhardt, Albert E. Combined can closure and pouring spout. 226,945, 5–22–73, Cl. D9—275.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W. 226,972.

Clairol Inc.: *See*—
Benty, John L., and Defano. 226,941.

Cowan, Murray L. Expansible link chain for a bracelet or similar article. 226,966, 5–22–73, Cl. D45—4.

Cowan, Murray L., to Textron Inc. Expansible link chain for a bracelet or similar article. 226,968, 5–22–73, Cl. D45—4.

Defano, Dominic: *See*—
Benty, John L., and Defano. 226,941.

Design Dynamics, Inc.: *See*—
Schier, Robert W. 226,964.

Ehrich, Hans O. G.: *See*—
Torbjorn, Tom E., and Ehrich. 226,943.

Florian, Gordon W., to General Signal Corp. Electric mixer housing. 226,958, 5–22–73, Cl. D44—1.

Fontaine, Raymond C., to Textron, Inc. Expansible link chain for a bracelet or similar article. 226,967, 5–22–73, Cl. D45—4.

Fox, Arthur J. Handbag. 226,993, 5–22–73, Cl. D87—3.

Francis, John P. Retractable window case structure and support therefor. 226,946, 5–22–73, Cl. D13—1.

Francis, John P. Retractable window case structure and support therefor. 226,947, 5–22–73, Cl. D13—1.

Francis, John P. Retractable window case structure and support therefor. 226,948, 5–22–73, Cl. D13—1.

Francis, John P. Retractable window case structure and support therefor. 226,948, 5–22–73, Cl. D13—1.

General Signal Corp.: *See*—
Florian, Gordon W. 226,958.

Grams, Johanna, to Porzellan-Handels-GmbH. Plate or similar article. 226,965, 5–22–73, Cl. D44—15.

Grauso, Robert M., and J. J. Norena, to C. F. Martin & Co. Combined cymbal mount and muffler or similar article. 226,983, 5–22–73, Cl. D56—1.

Kalimar, Inc.: *See*—
Kitagawa, Keisuke. 226,987.

Kikuchi, Tatsuo, and T. Toyama, to Nichiban Co., Ltd. Adhesive tape dispenser. 226,989, 5–22–73, Cl. D74—1.

Kind, Lyle E. Drinking cup. 226,961, 5–22–73, Cl. D44—9.

Kitagawa, Keisuke, to Kalimar, Inc. Electronic flash adapter for cameras. 226,987, 5–22–73, Cl. D61—1.

Krock, Albert W., to The Scott & Fetzer Co. Cup. 226,962, 5–22–73, Cl. D44—9.

Ladatta, Angelo J. Combined radio, chest and magazine rack or similar article. 226,986, 5–22–73, Cl. D56—4.

Lancaster Colony Corp.: *See*—
Angelakos, Nicholas P. 226,963.

Litton Systems, Inc.: *See*—
Wolff, Donald G., and Tapper. 226,990.

MacNair, Andrew P. Lamp. 226,971, 5–22–73, Cl. D48—20.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 226,974, 5–22–73, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 226,975, 5–22–73, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 226,977, 5–22–73, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 226,981, 5–22–73, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon similar article. 226,982, 5–22–73, Cl. D54—12.

Martin, C. F., & Co.: *See*—
Grauso, Robert M., and Norena. 226,983.

Martin, Robert T. Humidifier. 226,953, 5–22–73, Cl. D23—146.

Massey-Ferguson Inc.: *See*—
Albertson, Robert V. 226,988.

Monte, Ernest, to Sunbeam Lighting Co. Ceiling mounted fluorescent light fixture. 226,973, 5–22–73, Cl. D48—23.

Nichiban Co., Ltd.: *See*—
Kikuchi, Tatsuo, and Toyama. 226,989.

Norena, John J.: *See*—
Grauso, Robert M., and Norena. 226,983.

Okuda, Sakuui. Tooth brush. 226,942, 5–22–73, Cl. D4—25.

Oneida Ltd.: *See*—
Manderfield, Ellen B. 226,974.
Manderfield, Ellen B. 226,975.
Manderfield, Ellen B. 226,977.
Manderfield, Ellen B. 226,981.
Manderfield, Ellen B. 226,982.
Perry, Frank R. 226,980.
Richmond, Colin B. 226,976.
Richmond, Colin B. 226,978.
Richmond, Colin B. 226,979.

Papavasilious, Elaine J., to Symbologics, Inc. Medallion. 226,955, 5–22–73, Cl. D29—19.

Papavasiliou, Elaine J., to Symbologics, Inc. Medallion. 226,956, 5–22–73, Cl. 29—19.

Pasquale, Michael J. Food mold. 226,959, 5–22–73, Cl. D44—1.

Pasquale, Michael J. Food mold. 226,960, 5–22–73, Cl. D44—1.

Pelensky, Walter J. Stringed musical instrument. 226,984, 5–22–73, Cl. 56—1.

Pelensky, Walter J. Stringed musical instrument. 226,985. 5–22–73. Cl. D56—1.

Perry, Frank R., to Oneida Ltd. Spoon or similar article. 226,980, 5–22–73, Cl. D54—12.

Physics Apparatus Research, Inc.: *See*—
Stephenson, Roger D. 226,954.

Prozellan-Handels-GmbH: *See*—
Grams, Johanna. 226,965.

Qualitrol Corp.: *See*—
Brindisi, Frederick J. 226,952.

Quigley, Jeneane M., to The Witness Cross. Cross pendant or the like. 226,969, 5–22–73, Cl. D45—16.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 226,976, 5–22–73, Cl. D54—12.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 226,978, 5–22–73, Cl. D54—12.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 226,979, 5–22–73, Cl. D54—12.

Schier, Robert W., to Design Dynamics, Inc. Dish. 226,964, 5–22–73, Cl. D44—10.

Schwartz, Frederic W., to Cable Electric Products, Inc. Night light. 226,972, 5–22–73, Cl. D48—20.

Scott & Fetzer Co., The: *See*—
Krock, Albert W. 226,962.

Sirago, James J., and E. B. Walton. Detector for blood analysis. 226,950, 5–22–73. Cl. D16—1.

Sirago, James J., and E. B. Walton. Detector for blood analysis. 226,951, 5–22–73, Cl. D16—2.

Stanley Works, The: *See*—
Bobrowski, Louis G. 226,944.

Stephenson, Roger D., to Physics Apparatus Research, Inc. Teaching aid for measuring the acceleration of a falling body. 226,954, 5–22–73, Cl. D25—1.

Sunbeam Lighting Co.: *See*—
Monte, Ernest. 226,973.

Symbologics, Inc.: *See*—
Papavasiliou, Elaine J. 226,955.
Papavasiliou, Elaine J. 226,956.
Tapper, William R.: *See*—
Wolff, Donald G., and Tapper. 226,990.
Tegner, Carl-Axel. Mobile housing for conducting hearing tests. 226,991, 5–22–73, Cl. D83—1.
Texton, Inc.: *See*—
Cowan, Murray L. 226,968.
Fontaine, Raymond C. 226,967.
Tomy Kogyo Co., Ltd.: *See*—
Arai, Toshikatso. 226,957.
Torbjorn, Tom E., and H. O. G. Ehrich. Clothes hanger. 226,943, 5–22–73, Cl. D6—248.
Toyama, Takashi: *See*—
Kikuchi, Tatsuo, and Toyama. 226,989.
Walton, Edward B.: *See*—
Sirago, James J., and Walton. 226,950.
Sirago, James J., and Walton. 226,951.
Witness Cross, The: *See*—
Quigley, Jeneane M. 226,969.
Wolff, Donald G., and W. R. Tapper, to Litton Systems, Inc. Microwave oven. 226,990, 5–22–73, Cl. D81—4.

CLASSIFICATION OF PATENTS

ISSUED MAY 22, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

144 3,733,614
232 3,733,615

CLASS 3

1 3,733,616

CLASS 4

10 3,733,617
3,734,617
51R 3,734,618
72 3,733,619
159 3,733,620
172.19 3,733,621
191 3,733,622

CLASS 5

58 3,733,624
63 3,733,623
354 3,733,625

CLASS 7

5.3 3,733,626
5.4 3,733,627

CLASS 8

116R 3,734,683
129 3,734,685
137 3,734,686
159 3,734,688
183 3,734,684
188 3,734,687

CLASS 9

1T 3,733,628
8R 3,733,629
311 3,733,630
340 3,733,631

CLASS 12

1R 3,733,632

CLASS 13

25 3,735,008
29 3,735,009
35 3,735,010
3,735,011

CLASS 15

21A 3,733,633
28 3,733,634
49R 3,733,635
93R 3,733,637
111 3,733,636
193 3,733,638
210B 3,733,641
250.32 3,733,642
250.42 3,733,643
256.53 3,733,644
257R 3,733,645
304 3,733,639
369 3,733,646
402 3,733,640

CLASS 16

16 3,733,647
21 3,733,648
137 3,733,649
160 3,733,650
178 3,733,651

CLASS 17

32 3,733,652
35 3,733,653

CLASS 23

230C 3,734,690
253PC 3,734,693
253R 3,734,691
254R 3,734,692
262 3,734,694
301SP 3,734,695
312ME 3,734,696

CLASS 24

20TT 3,733,654
73P 3,733,655
137R 3,733,656
150FP 3,733,657
152 3,733,658

CLASS 26

420.5 3,733,678

CLASS 28

1.7 3,733,659

CLASS 29

25.35 3,733,661
25.41 3,733,660
57 3,733,662
78R 3,733,663
95 3,733,664
105R 3,733,665
149.5NM 3,733,668
149.5B 3,733,666
155R 3,733,669
156.8R 3,734,697
182.7 3,733,667
191 3,734,698
191.4 3,734,699
200A 3,733,670
200J 3,733,671
202R 3,733,673
203HC 3,733,674
203B 3,733,672
403 3,733,675
407 3,733,676
411 3,733,677
429 3,733,680
431 3,733,679
447 3,733,681
450 3,733,682
470.1 3,733,684
3,733,685
471.1 3,733,683
472.001 3,733,686
504 3,733,687
523 3,733,688
559 3,733,689
577 3,733,690
588 3,733,691
599 3,733,692
600 3,733,693
3,733,694
610 3,733,695
624 3,733,696
628 3,733,697

CLASS 30

4R 3,733,698
180 3,733,699
381 3,733,700
391 3,733,701

CLASS 33

79R 3,733,703
147R 3,733,705
174L 3,733,704
180R 3,733,706
3,733,707
355 3,733,708

CLASS 34

4 3,733,709
23 3,733,711
45 3,733,712
57A 3,733,713
82 3,733,715
92 3,733,716
173 3,733,714

CLASS 35

9A 3,733,717
34 3,733,718
35C 3,733,719
45 3,733,720

CLASS 36

32R 3,733,721

CLASS 37

9 3,733,710
142A 3,733,722

CLASS 38

69 3,733,723
77.5 3,733,725
140 3,733,724

CLASS 40

104.17 3,733,726

CLASS 42

1R 3,733,727
3,733,728
23 3,733,729
65 3,733,730
69A 3,733,731
75D 3,733,732

CLASS 43

3 3,733,733
44.9 3,733,734
61 3,733,735

CLASS 46

7 3,733,736
44 3,733,740
79 3,733,737
91 3,733,738
175AR 3,733,741
202 3,733,742
206 3,733,739
228 3,733,743
243E 3,733,744

CLASS 47

37 3,733,745
38 3,733,746

CLASS 49

30 3,733,747
103 3,733,748
193 3,733,749
379 3,733,750

CLASS 51

3 3,733,751
8 3,733,752
34E 3,733,753
61 3,734,700
375 3,733,754

CLASS 52

36 3,733,755
3,733,756
105 3,733,757
113 3,733,758
122 3,733,759
126 3,733,763
192 3,733,764
220 3,733,761
224 3,733,760
263 3,733,762
474 3,733,765
480 3,733,766
529 3,733,767

CLASS 53

24 3,733,769
25 3,733,768
29 3,733,770
37 3,733,771
167 3,733,772
184 3,733,773
232 3,733,774

CLASS 55

16 3,733,776
28 3,733,775
48 3,733,777
73 3,733,779
3,733,780
3,733,781
89 3,733,778
95 3,733,782
104 3,733,783
117 3,733,784
129 3,733,785
222 3,733,786
228 3,733,787
3,733,788
233 3,733,789
324 3,733,790
390 3,733,791
488 3,733,792
493 3,733,793

CLASS 56

10.5 3,733,794
121.45 3,733,795
220 3,733,796
328R 3,733,797
350 3,733,798

CLASS 57

34R 3,733,799
157TS 3,733,801

CLASS 58

4A 3,733,810
16.5 3,733,802
23R 3,733,803
38 3,733,804
79 3,733,805
82R 3,733,806
90R 3,733,807
112 3,733,808
127R 3,733,809
140R 3,733,800

CLASS 59

35 3,733,811

CLASS 60

6 3,733,812
39.09P 3,733,814
39.16R 3,733,815
39.28R 3,733,816
39.77 3,733,820
54.5R 3,733,822
54.6R 3,733,823
108 3,733,819
224 3,733,824
235 3,733,825
258 3,733,828
263 3,733,826
278 3,733,827
289 3,733,829
351 3,733,821
393 3,733,813
405 3,733,817
422 3,733,818

CLASS 61

1 3,733,830
4 3,733,831
15 3,733,832
36R 3,733,833
46 3,733,834
84 3,733,835

CLASS 62

3 3,733,836
6 3,733,837
54 3,733,838
64 3,733,839
78 3,733,840
180 3,733,841
259 3,733,842
262 3,733,843
320 3,733,844
335 3,733,845
345 3,733,846
375 3,733,847
381 3,733,848
414 3,733,849
468 3,733,850

CLASS 63

1 3,733,851
2 3,733,852

CLASS 64

7 3,733,853
32 3,733,854

CLASS 65

27 3,734,701
43 3,734,702
68 3,734,703
69 3,734,704
87 3,734,705
104 3,734,706

CLASS 66

50R 3,733,855
62 3,733,856
86R 3,733,857
140R 3,733,858
193 3,733,859
195 3,733,860

CLASS 70

153 3,733,861
277 3,733,862
363 3,733,863
3,733,864
370 3,733,865

CLASS 71

30 3,734,707
34 3,734,708
59 3,734,709
103 3,734,710
118 3,734,711
120 3,734,712

CLASS 72

6 3,733,866
93 3,733,867
181 3,733,868
205 3,733,869
209 3,733,871
213 3,733,872
235 3,733,874
237 3,733,875
239 3,733,876
3,733,877
241 3,733,878
245 3,733,870
328 3,733,879
332 3,733,873
344 3,733,880
349 3,733,881
391 3,733,882
402 3,733,883
429 3,733,884
461 3,733,885
469 3,733,886

CLASS 73

15A 3,733,887
23 3,734,489
63 3,733,888
67.2 3,733,890
67.5 3,733,889
67.9 3,733,891
71.4 3,733,892
73 3,733,893
117 3,733,894
161 3,733,895
193R 3,733,896
194B 3,733,897
198 3,733,898
204 3,733,899
212 3,733,900
213 3,733,901
3,733,902
3,733,903
231R 3,733,910
233 3,733,904
356 3,733,905
421B 3,733,906
421.5R 3,733,907
422GC 3,733,908
3,733,909

CLASS 74

3.52 3,733,911
15.4 3,733,912
78 3,733,913
89.15 3,733,914
99 3,733,915
125 3,733,916
144 3,733,917
230.17E 3,733,918
242.16 3,733,919
*410 3,733,926
439 3,733,921
523 3,733,922
573 3,733,923
687 3,733,924
753 3,733,927
3,733,928
763 3,733,920
822 3,733,929
866 3,733,930
868 3,733,931
869 3,733,932

CLASS 75

.5AC 3,734,713
10R 3,734,714
21 3,734,715
28 3,734,716
3,734,717
63 3,734,718
65 3,734,719
93 3,734,720
108 3,734,721
118 3,734,722
214 3,734,723

CLASS 76

88 3,733,933
112 3,733,934

CLASS 81

52.4 3,733,935
58.1 3,733,936
71 3,733,937
119 3,733,938

CLASS 82

4C 3,733,939
21R 3,733,940
24A 3,733,925
59 3,733,941

CLASS 83

2 3,733,942
7 3,733,943
24 3,733,945
62 3,733,944
98 3,733,948
129 3,733,946
280 3,733,947
348 3,733,949
425.3 3,733,950
474 3,734,150
484 3,733,951
789 3,733,952

CLASS 84

1.01 3,733,955
3,735,012
1.16 3,733,953
1.24 3,735,014
1.25 3,735,013
312 3,733,954
471 3,733,956
3,733,957

CLASS 85

37 3,733,958
75 3,733,959

CLASS 89

33MC 3,733,960

CLASS 90

21R 3,733,961
24F 3,733,962

CLASS 91

3 3,733,963
275 3,733,965
372 3,733,966
375A 3,733,967
391R 3,733,968
412 3,733,964
421 3,733,969
506 3,733,970

CLASS 92

26 3,733,971
37 3,733,972
159 3,733,973
172 3,733,974

CLASS 93

49M 3,733,980
76 3,733,982
84R 3,733,975

CLASS 95

1R 3,733,976
1.1 3,733,985
4.5R 3,733,977
3,733,983
4.5 3,733,978
3,733,979
10CT 3,733,984
11UW 3,733,981
11V 3,733,986
11.5R 3,733,987
42 3,733,988
44C 3,733,989
55 3,733,990
63 3,733,991
89R 3,733,993
94R 3,733,992
97 3,733,994

CLASS 96

1.4 3,734,724
3 3,734,726
29D 3,734,727
35.1 3,734,725
36.1 3,734,728
3,734,731
36.3 3,734,729
3,734,730
3,734,732
48HD 3,734,733
55 3,734,735
67 3,734,736
80 3,734,737
107R 3,734,738
132 3,734,739

CLASS 98

2.12 3,733,996
40D 3,733,995

CLASS 99

1 3,734,740
28 3,734,742
48 3,734,734
90S 3,734,743
107 3,734,741
3,734,744
130 3,734,745
147 3,734,746
148R 3,734,747
150R 3,734,748
172 3,734,749
178 3,734,750
193 3,734,751
233.11 3,733,997
233.3 3,734,752
330 3,733,998
337 3,733,999
462 3,733,702
532 3,734,001
539 3,734,000
543 3,734,002
588 3,734,003
637 3,734,004

CLASS 100

52 3,734,005
53 3,734,006
152 3,734,007
218 3,734,008
229A 3,734,009

CLASS 101

79 3,734,010
91 3,734,011
93C 3,734,012
3,734,013
186 3,734,014
229 3,734,015
232 3,734,016
378 3,734,017

CLASS 102

20 3,734,018
27R 3,734,019
40 3,734,020
70.2R 3,734,021
78 3,734,022
79 3,734,023
100 3,734,024

CLASS 104

88 3,734,025
167 3,734,026
172S 3,734,027
245 3,734,028

CLASS 105

131 3,734,029
164 3,734,030
367 3,734,031

CLASS 106

19 3,734,753
47R 3,734,754
73.4 3,734,755
74 3,734,756
186 3,734,757
193R 3,734,758
193 3,734,759
210 3,734,760
300 3,734,761

CLASS 108

111 3,734,032
3,734,033

CLASS 110

1F 3,734,034
7R 3,734,035
8R 3,734,036
93.31 3,734,764
165R 3,734,037

CLASS 112

121.15 3,734,038
153 3,734,040
176 3,734,039
212 3,734,041

CLASS 113

8 3,734,042
120BB 3,734,043
121C 3,734,044

CLASS 114

.5R 3,734,045
.5 3,734,046
39 3,734,047
222 3,734,048

CLASS 115

6.1 3,734,049
35 3,734,050

CLASS 116

31 3,734,051
114 3,734,052
137 3,734,053
148 3,734,054

CLASS 117

37R 3,734,762
72 3,734,763
94 3,734,765
100A 3,734,766
123B 3,734,767
132BS 3,734,768
212 3,734,769
217 3,734,770
234 3,734,771
235 3,734,772

CLASS 118

8 3,734,055
48 3,734,056

CLASS 119

1 3,734,057
3 3,734,058
27 3,734,059
51R 3,734,060
52R 3,734,061
61 3,734,062
72.5 3,734,063

CLASS 122

136R 3,734,064
250R 3,734,065
367R 3,734,066

CLASS 123

32EA 3,734,067
3,734,068
32SP 3,734,069
41.31 3,734,070
55V 3,734,071
73A 3,734,072
90.15 3,734,073
119CB 3,734,074

CLASS 124

1 3,734,075

CLASS 126

25R 3,734,076
246 3,734,077

CLASS 127

48 3,734,773

CLASS 128

1A 3,734,078
2F 3,734,080
2G 3,734,079
2N 3,734,081
3,734,082
2.05F 3,734,083
2.06E 3,734,094
2.06R 3,734,086
15 3,734,084
36 3,734,085
64 3,734,087
75 3,734,088
130 3,734,089
3,734,090
142 3,734,091
145.5 3,734,092
184 3,734,093
214.4 3,734,095
268 3,734,097
272 3,734,098
283 3,734,096
305 3,734,099
351 3,734,100
533 3,734,101

CLASS 130

26 3,734,102
27L 3,734,103

CLASS 131

140P 3,734,104

CLASS 132

53 3,734,105
79 3,734,106
92A 3,734,107

CLASS 134

2 3,734,774
10 3,734,775
25R 3,734,776
64 3,734,109
76 3,734,108
132 3,734,777

CLASS 135

1A 3,734,110

CLASS 136

13 3,734,778
3,734,779
111 3,734,780
146 3,734,781

CLASS 137

3 3,734,111
15 3,734,112
40 3,734,113
68 3,734,114
73 3,734,115
82 3,734,117
84 3,734,118
92 3,734,119
220 3,734,120
3,734,121
340 3,734,122
392 3,734,123
430 3,734,124
495 3,734,125
512.15 3,734,126
583 3,734,127
596 3,734,129
596.1 3,734,130
596.2 3,734,128
608 3,734,131
625.49 3,734,132
636 3,734,133
637.2 3,734,134
836 3,734,116

CLASS 138

38 3,734,135
103 3,734,136
105 3,734,137
106 3,734,138
146 3,734,139
177 3,734,140

CLASS 139

122 3,734,141
123 3,734,142
127P 3,734,143
336 3,734,144

CLASS 140

71R 3,734,146
92.1 3,734,145

CLASS 141

27 3,734,147
350 3,734,149

CLASS 144

1R 3,734,151
3D 3,734,152
326 3,734,153

CLASS 148

6.15R 3,734,783
6.27 3,734,784
6.3 3,734,782
11.5R 3,734,785
23 3,734,791
175 3,734,787

CLASS 149

19 3,734,786
3,734,788
3,734,789
22 3,734,790
36 3,734,792
100 3,734,793

CLASS 150

9 3,734,154
39 3,734,155

CLASS 151

21B 3,734,156

CLASS 152

354 3,734,157
427 3,734,158

CLASS 156

53 3,734,794
98 3,734,795
253 3,734,797
308 3,734,798
3,734,799
309 3,734,800
3,734,801
345 3,734,802
441 3,734,803
518 3,734,804
580 3,734,805

CLASS 157

1 3,734,159

CLASS 159

47R 3,734,160

CLASS 160

133 3,734,161

CLASS 161

2 3,734,806
5 3,734,807
6 3,734,808
17 3,734,809
37 3,734,811
57 3,734,812
112 3,734,814
148 3,734,813
165 3,734,815
167 3,734,816
176 3,734,796
192 3,734,817
213 3,734,818
254 3,734,819

CLASS 162

168 3,734,820
317 3,734,821
343 3,734,822

CLASS 164

87 3,734,162
187 3,734,163
252 3,734,164
274 3,734,165
283 3,734,166
324 3,734,167

CLASS 165

11 3,734,168
28 3,734,169
29 3,734,810
39 3,734,192
51 3,734,170
54 3,734,171
96 3,734,172
105 3,734,173
154 3,734,174
158 3,734,175
3,734,176
166 3,734,177
170 3,734,178

CLASS 166

106 3,734,179
244 3,734,181
254 3,734,182
259 3,734,180
3,734,184
263 3,734,183
273 3,734,185
275 3,734,187
282 3,734,186
292 3,734,188
308 3,734,189
315 3,734,190

CLASS 169

5 3,734,191

CLASS 171

57 3,734,193
101 3,734,194

CLASS 172

7 3,734,195
16 3,734,196
21 3,734,197
258 3,734,198
298 3,734,200
551 3,734,199
3,734,201

CLASS 173

4 3,734,202
24 3,734,203
43 3,734,204
93.5 3,734,205
137 3,734,206
163 3,734,207

CLASS 174

28 3,735,016
3,735,018
31R 3,735,019
52S 3,735,017
66 3,735,020
86 3,735,021
117FF 3,735,023
117F 3,735,022
120SC 3,735,025
151 3,735,024

CLASS 175

52 3,734,208
57 3,734,209
85 3,734,210
3,734,211
171 3,734,212
374 3,734,213
384 3,734,214

CLASS 176

26 3,734,823
36R 3,734,824
3,734,825
37 3,734,826
87 3,734,827

CLASS 177

59 3,734,215
136 3,734,216
163 3,734,217
203 3,734,218

CLASS 178

5.1 3,735,027
5.4CD 3,735,015
5.4ST 3,735,028
3,735,030
3,735,032
3,735,033
5.4R 3,735,026
3,735,029
6.5 3,735,031
6.8 3,735,036
7.1 3,735,034
3,735,035
7.3R 3,735,037
3,735,038
7.5R 3,735,039
7.6 3,735,040
7.9 3,735,041
15 3,735,042
19 3,735,044
69G 3,735,043
69.5R 3,735,045
115 3,735,046

CLASS 179

1GQ 3,735,047
15AQ 3,735,049
15BM 3,735,048
18EB 3,735,051
18GF 3,735,057
90B 3,735,050
100.2ZA 3,735,053
100.2C 3,735,052
100.2S 3,735,054
170E 3,735,056
170.2 3,735,055

CLASS 180

5R 3,734,219
3,734,221
8E 3,734,220
54R 3,734,222
64L 3,734,223
66R 3,734,224
3,734,225
79.2R 3,734,226
3,734,227
82R 3,734,228
98 3,734,229
99 3,734,230
125 3,734,231

CLASS 181

.5AG 3,734,233
.5VM 3,734,232
33G 3,734,234

CLASS 182

121 3,734,236
153 3,734,235
216 3,734,237

CLASS 187

1 3,734,238
9 3,734,239
89 3,734,240

CLASS 188

32 3,734,241
71.4 3,734,242
72.4 3,734,243
83 3,734,244
163 3,734,245
196A 3,734,246
264A 3,734,247
345 3,734,248

CLASS 190

41B 3,734,249
48 3,734,250

CLASS 192

3.3 3,734,251
3.52 3,734,252
8C 3,734,253
16 3,734,254
36 3,734,255
84A 3,734,256
87.13 3,734,257
88B 3,734,258
113B 3,734,259
127 3,734,260

CLASS 194

4F 3,734,261

CLASS 195

28R 3,734,828
29 3,734,829
65 3,734,830
66R 3,734,831
80R 3,734,832

CLASS 197

43 3,734,262

CLASS 198

19 3,734,263
20T 3,734,264
24 3,734,265
3,734,266
30 3,734,267
33AD 3,734,268
184 3,734,270
3,734,271
197 3,734,269

CLASS 200

11R 3,734,869
16A 3,735,058
16C 3,735,059
16R 3,735,060
3,735,061
38CA 3,735,063
38R 3,735,062
50AA 3,735,065
50A 3,735,064
52R 3,735,066
61.45R 3,735,072
61.86 3,735,067
67D 3,735,069
67P 3,735,080
78 3,735,070
83J 3,735,071
144C 3,735,074
146R 3,735,075
153SC 3,735,073
159B 3,735,068
166D 3,735,076
166F 3,735,079
167A 3,735,077
168G 3,735,078

CLASS 201

17 3,734,833
39 3,734,834

CLASS 203

7 3,734,835

CLASS 204

15 3,734,836
36 3,734,837
43R 3,734,838
49 3,734,840
55Y 3,734,839
67 3,734,841
86 3,734,842
159.14 3,734,843
3,734,844
162XN 3,734,845
176 3,734,846
181 3,734,847
220 3,734,848

CLASS 206

1R 3,734,272
17.5 3,734,282
42 3,734,283
45.14 3,734,284
45.31 3,734,275
46FC 3,734,273
46F 3,734,274
47R 3,734,276
58 3,734,277
65B 3,734,281
65R 3,734,279
3,734,280
65S 3,734,278

CLASS 209

121 3,734,286
139A 3,734,287
211 3,734,288
467 3,734,289

CLASS 210

3 3,734,850
22 3,734,851
146 3,734,290
152 3,734,291
3,734,852
169 3,734,853
172 3,734,292
185 3,734,293
203 3,734,854
242 3,734,294
278 3,734,295
288 3,734,296
321 3,734,297
3,734,298
3,734,855
333 3,734,299

CLASS 211

177 3,734,300
3,734,301

CLASS 212

1 3,734,302

CLASS 214

1BB 3,734,303
1BD 3,734,304
3,734,307
1QG 3,734,305
1T 3,734,306
10.5R 3,734,308
3,734,309
16.4A 3,734,310
3,734,311
3,734,312
17CA 3,734,313
38CC 3,734,315
38R 3,734,314
82 3,734,316
83.14 3,734,318
83.3 3,734,317
131 3,734,319
138R 3,734,320
450 3,734,321
3,734,322
451 3,734,323
621 3,734,324
652 3,734,328
658 3,734,325
674 3,734,326
730 3,734,327
750 3,734,329

CLASS 215

9 3,734,330
3,734,331
3,734,332
46A 3,734,333
130R 3,734,505

CLASS 217

3R 3,734,334

CLASS 219

10.41 3,735,083
10.55 3,735,081
10.79 3,735,082
67 3,735,084
70 3,735,085
73 3,735,086
3,735,087
85 3,735,088

87 3,735,089
146 3,735,090
400 3,735,091
501 3,735,092

CLASS 220

3.94 3,734,342
4R 3,734,335
21 3,734,336
22 3,734,337
47 3,734,343
54 3,734,338
63R 3,734,340
97D 3,734,341

CLASS 221

14 3,734,344
81 3,734,345
101 3,734,346
134 3,734,347

CLASS 222

1 3,734,348
3 3,734,349
56 3,734,339
92 3,734,350
103 3,734,351
148 3,734,352
153 3,734,353
3,734,354
167 3,734,355
199 3,734,356
323 3,734,357
326 3,734,358
484 3,734,359
537 3,734,360
556 3,734,361

CLASS 223

68 3,734,362
116 3,734,363
3,734,364

CLASS 224

8R 3,734,365
25A 3,734,366
3,734,367

CLASS 226

44 3,734,368
109 3,734,371
114 3,734,372
119 3,734,370
134 3,734,369
196 3,734,373
199 3,734,374

CLASS 227

67 3,734,375
111 3,734,376
120 3,734,377
124 3,734,378
127 3,734,379
140 3,734,380
148 3,734,381

CLASS 228

1 3,734,382
2 3,734,383
4 3,734,384
3,734,385
5 3,734,386
6 3,734,387

CLASS 229

7 3,734,388
14C 3,734,389
27 3,734,390
31R 3,734,391
34 3,734,392
39B 3,734,397
43 3,734,393
55 3,734,394
58 3,734,395
68R 3,734,396

CLASS 233

3 3,734,398
7 3,734,399
11 3,734,400
20R 3,734,401

CLASS 235

61.1 3,735,093
61.11E 3,735,094
3,735,096
61.11F 3,735,097
61.11R 3,735,098
61.9R 3,735,095
89R 3,735,100
91R 3,735,099
92T 3,735,101
94R 3,735,102
95R 3,735,103
151.11 3,735,104
153AC 3,735,105
154 3,735,106
159 3,735,107
3,735,108
185 3,735,109
197 3,735,110

CLASS 236

21B 3,734,402
34.5 3,734,405
87 3,734,403
99 3,734,409

CLASS 238

10E 3,734,404

CLASS 239

8 3,734,406
13 3,734,407
29 3,734,408
102 3,734,410
265.29 3,734,411

CLASS 240

1.3 3,735,111
2S 3,735,112
6.4G 3,735,113
7.1 3,735,114
7.7 3,735,115
8.2 3,735,116
10R 3,735,118
10T 3,735,117
10.6R 3,735,119
11.1 3,735,120
41.3 3,735,125
41.6 3,735,121
51.12 3,735,122
78F 3,735,123
106R 3,735,124

CLASS 241

15 3,734,412
39 3,734,413
40 3,734,414
65 3,734,415
82.1 3,734,148
100.5 3,734,416
168 3,734,417
207 3,734,418
282 3,734,419

CLASS 242

4A 3,734,420
7.21 3,734,421
36 3,734,422
56A 3,734,423
75.4 3,734,424
187 3,734,425
190 3,734,426
197 3,734,427

CLASS 243

33 3,734,428

CLASS 244

1R 3,734,429
46 3,734,430
49 3,734,431
77G 3,734,432

CLASS 246

1R 3,734,433
125 3,734,434

CLASS 248

2 3,734,435
58 3,734,436
205R 3,734,437
221 3,734,438
224 3,734,439
265 3,734,440
354C 3,734,441
361R 3,734,443
3,734,444
361 3,734,442
3,734,445
460 3,734,446
481 3,734,447

CLASS 249

103 3,734,448
114 3,734,449
146 3,734,450
171 3,734,452
192 3,734,451
202 3,734,454
213 3,734,453

CLASS 250

43.5D 3,735,126
43.5R 3,735,127
49.5C 3,735,128
65 3,735,129
66 3,735,130
71R 3,735,134
71T 3,735,131
71.5S 3,735,132
72 3,735,133
83.1 3,735,135
83.3HP 3,735,137
83.3H 3,735,136
83.6FT 3,735,138
213VT 3,735,139
3,735,140
214R 3,735,141
219D 3,735,142
223B 3,735,144
226 3,735,143

CLASS 251

62 3,734,455
145 3,734,456
173 3,734,457
267 3,734,458
285 3,734,459
321 3,734,460
366 3,734,461

CLASS 252

8.5M 3,734,856
51.5A 3,734,865
51.5R 3,734,857
90 3,734,858
108 3,734,859
158 3,734,860
180 3,734,861
188 3,734,863
188.3CL 3,734,862
315 3,734,864

CLASS 254

1 3,734,462
30 3,734,463
84 3,734,465
89 3,734,466
93R 3,734,464

CLASS 256

65 3,734,467

CLASS 259

6 3,734,468
3,734,471
8 3,734,469
89 3,734,470
192 3,734,472

CLASS 260

2R 3,734,866
2.5AM 3,734,868
2.5AQ 3,734,871
2.5N 3,734,870
2.5R 3,734,867
22CB 3,734,872
29.2E 3,734,874
29.3 3,734,918
29.6H 3,734,873
31.2R 3,734,875
32.6PQ 3,734,878
32.8N 3,734,894
33.6R 3,734,876
37SB 3,734,877
3,734,881
3,734,882
37N 3,734,879
3,734,880
39SB 3,734,936
45.8N 3,734,883
45.85B 3,734,885
45.9NC 3,734,884
45.9R 3,734,886
47EN 3,734,887
47R 3,734,888
75R 3,734,890
3,734,891
3,734,892
77.5AM 3,734,896
77.5C 3,734,889
77.5R 3,734,895
78.4R 3,734,893
79.3MU 3,734,897
84.3 3,734,898
93.7 3,734,899
94.3 3,734,900
123.5 3,734,901
210R 3,734,902
239.1 3,734,903
3,734,904
3,734,906
239.3T 3,734,919
243C 3,734,907
244R 3,734,908
247.2A 3,734,905
249.6 3,734,909
250A 3,734,910
256 3,734,911
256.5B 3,734,913
256.5R 3,734,912
268BC 3,734,916
268FT 3,734,915
270R 3,734,917
283P 3,734,914
295R 3,734,920
295.5B 3,734,921
296T 3,734,922
306.8R 3,734,923
309 3,734,924
326N 3,734,925
3,734,926
326.5FM 3,734,927
332.2R 3,734,928
343.6 3,734,929
345.3 3,734,930
346.2G 3,734,931
347.8 3,734,932
371 3,734,933
376 3,734,934
395 3,734,937
397.1 3,734,938
397.4 3,734,935
404.5 3,734,939
448B 3,734,940
453P 3,734,941
465B 3,734,942
465.3 3,734,943
468E 3,734,945
468.5 3,734,944
471C 3,734,946
473R 3,734,947
3,734,948
482B 3,734,849
3,734,949
484A 3,734,950
485R 3,734,951
501.11 3,734,952
3,734,953
502.4P 3,734,954
515P 3,734,956
3,734,966
515R 3,734,955
539R 3,734,957
543P 3,734,958
544M 3,734,959
545R 3,734,960
553A 3,734,961
556F 3,734,962
563R 3,734,963
566A 3,734,964
570.5P 3,734,965
586R 3,734,967
609D 3,734,968
3,734,969
611A 3,734,970
618F 3,734,971
665R 3,734,972
3,734,973
674SA 3,734,974
683.15D 3,734,975
823 3,734,976
874 3,734,977
878B 3,734,978
897R 3,734,979
944 3,734,980
959 3,734,981

CLASS 261

44R 3,734,473
95 3,734,474

CLASS 264

3C 3,734,983
3R 3,734,982
40 3,734,984
45 3,734,985
49 3,734,986
54 3,734,987
82 3,734,988
135 3,734,989
137 3,734,990
157 3,734,991
159 3,734,992
177F 3,734,993
288 3,734,994
322 3,734,995

CLASS 266

12 3,734,475
23M 3,734,477
23R 3,734,476
36 3,734,479
39 3,734,480

CLASS 267

34 3,734,478
52 3,734,482
65 3,734,483
137 3,734,484

CLASS 269

3,734,485
228 3,734,481
302.1 3,734,486

CLASS 270

52 3,734,487
58 3,734,488

CLASS 271

34 3,734,490
51 3,734,491

CLASS 272

1B 3,734,492
58 3,734,494
3,734,495
65 3,734,496
84 3,734,493

CLASS 273

1E 3,734,497
63E 3,734,498
73E 3,734,499
85R 3,734,500
93R 3,734,501
95R 3,734,502
101 3,734,503
126R 3,734,504
130E 3,734,506
134A 3,734,507
134C 3,734,508
139 3,734,509
152R 3,734,510

CLASS 274

1R 3,734,511
23R 3,734,512

CLASS 277

233 3,734,514

CLASS 279

1A 3,734,515
48 3,734,513
75 3,734,516
81 3,734,517

CLASS 280

5.3 3,734,518
11.13R 3,734,519
11.35T 3,734,520
3,734,521
3,734,522
16 3,734,523
25 3,734,524
30 3,734,525
33.99T 3,734,526
42 3,734,528
79.1 3,734,527
80B 3,734,529
81.5 3,734,530
150A 3,734,532
150B 3,734,533
150.5 3,734,531
163 3,734,534
204 3,734,536
215 3,734,535
421 3,734,537
426 3,734,538
477 3,734,539
482 3,734,540
506 3,734,541

CLASS 281

47 3,734,542

CLASS 282

23R 3,734,543

CLASS 283

56 3,734,544

CLASS 285

5 3,734,545
49 3,734,546
357 3,734,547

CLASS 287

20.92G 3,734,549
53R 3,734,548
189.36A 3,734,550

CLASS 289

2 3,734,285

CLASS 292

17 3,734,551
67 3,734,552
251.5 3,734,553

CLASS 293

71R 3,734,557
88 3,734,554

CLASS 294

81SF 3,734,555
88 3,734,556

CLASS 296

23C 3,734,559
23R 3,734,558
50 3,734,560

CLASS 297

216 3,734,562
239 3,734,561

CLASS 298

8 3,734,563

CLASS 299

9 3,734,564

CLASS 301

5R 3,734,565
6CS 3,734,566

CLASS 302

2R 3,734,567
39 3,734,569
47 3,734,568

CLASS 303

6C 3,734,570
20 3,734,571
21BE 3,734,572
21F 3,734,573
22R 3,734,574
33 3,734,575

CLASS 305

4D 3,734,577
37 3,734,576

CLASS 307

88LC 3,735,145
106 3,735,146
119 3,735,147
133 3,735,148
230 3,735,149
232 3,735,150
235R 3,735,151
237 3,735,152
246 3,735,153
273 3,735,154
279 3,735,155
304 3,735,156
3,735,157
305 3,735,158

CLASS 308

10 3,734,578
20 3,734,579
36.3 3,734,580
160 3,734,581
173 3,734,582
189R 3,734,583
213 3,734,584
238 3,734,585

CLASS 310

6 3,735,160
8.3 3,735,159
9.4 3,735,166
9.5 3,735,161
13 3,735,162
3,735,163
41 3,735,164
49 3,735,165
168 3,735,167
200 3,735,168
214 3,735,169
219 3,735,170
235 3,735,171
239 3,735,172
242 3,735,173
266 3,735,174

CLASS 312

39 3,734,586
186 3,734,587
247 3,734,588
322 3,734,590
351 3,734,589

CLASS 313

60 3,735,175
3,735,176
65A 3,735,177
70 3,735,178
92B 3,735,179
105 3,735,184
109.5 3,735,180
3,735,181
188 3,735,182
3,735,183
278 3,735,185
346R 3,735,186
355 3,735,187

CLASS 315

3.5 3,735,188
13CG 3,735,189
3,735,190
13C 3,735,191
27TD 3,735,192
27XY 3,735,193
30 3,735,194
111 3,735,195
200A 3,735,196
348 3,735,197

CLASS 317

2F 3,735,198
3 3,735,199
5 3,735,200
11R 3,735,201
13R 3,735,202
27R 3,735,203
3,735,204
33SC 3,735,215
100 3,735,205
3,735,206
134 3,735,207
234R 3,735,208
3,735,209
3,735,210
3,735,211
3,735,212
3,735,213
3,735,214

CLASS 318

100 3,735,217
135 3,735,219
138 3,735,216
139 3,735,220
151 3,735,221
227 3,735,222
258 3,735,223
284 3,735,224
332 3,735,225
338 3,735,226
394 3,735,227
564 3,735,228
611 3,735,229
637 3,735,230
687 3,735,231

CLASS 320

2 3,735,232
24 3,735,233
44 3,735,234

CLASS 321

2 3,735,235
3,735,236
6 3,735,237
15 3,735,238
16 3,735,239

CLASS 323

4	3,735,240
22SC	3,735,241
22T	3,735,242
43.5R	3,735,243
51	3,735,244
109	3,735,245

CLASS 324

.5R	3,735,246
9	3,735,249
34R	3,735,247
51	3,735,248
	3,735,250
54	3,735,251
59	3,735,252
64	3,735,253
	3,735,254
73R	3,735,255
77D	3,735,256
78E	3,735,257
97	3,735,258
110	3,735,259
174	3,735,262
175	3,735,260
181	3,735,261
186	3,735,263

CLASS 325

28	3,735,265
38	3,735,264
60	3,735,266
446	3,735,267
464	3,735,268

CLASS 328

14	3,735,269
55	3,735,270
112	3,735,271
132	3,735,272
133	3,735,324
134	3,735,218
163	3,735,273

CLASS 330

1A	3,735,274
59	3,735,275

CLASS 331

11	3,735,276
45	3,735,277
94.5	3,735,278
	3,735,279
	3,735,280
	3,735,281
	3,735,282
	3,735,283
	3,735,284
	3,735,285
101	3,735,286
106	3,735,287

CLASS 332

18	3,735,288

CLASS 333

5	3,735,289
14	3,735,290
24.1	3,735,291
30R	3,735,292
84R	3,735,293

CLASS 335

134	3,735,294
160	3,735,295
165	3,735,296
203	3,735,297
206	3,735,298
	3,735,300
213	3,735,299
244	3,735,301
262	3,735,302
272	3,735,303
278	3,735,304

CLASS 336

110	3,735,305
192	3,735,306
	3,735,307

CLASS 337

13	3,735,308
21	3,735,309
107	3,735,310
108	3,735,311
164	3,735,312
268	3,735,313
290	3,735,315
291	3,735,317
296	3,735,318
335	3,735,316
347	3,735,319
382	3,735,314

CLASS 338

2	3,735,320
22R	3,735,321
28	3,735,322
41	3,735,323
164	3,735,325
180	3,735,326
183	3,735,327
270	3,735,328

CLASS 339

89R	3,735,329
91R	3,735,330
97C	3,735,331
217R	3,735,332

CLASS 340

1R	3,735,333
3R	3,735,334
8L	3,735,336
15.5TD	3,735,337
18R	3,735,338
23	3,735,335
25	3,735,339
27SS	3,735,340
27R	3,735,341
34	3,735,342
52A	3,735,343
58	3,735,344
62	3,735,345
63	3,735,346
146.1C	3,735,351
146.1R	3,735,348
146.2	3,735,347
146.3SY	3,735,350
146.3H	3,735,349
147R	3,735,352
164R	3,735,353
172.5	3,735,354
	3,735,355
	3,735,356
	3,735,357
	3,735,359
	3,735,360
	3,735,361
	3,735,362
	3,735,363
	3,735,364
	3,735,365
	3,735,366
173SP	3,735,367
173R	3,735,358
	3,735,368
174NA	3,735,373
174TF	3,735,370
174R	3,735,369
174.1H	3,735,372
177CA	3,735,371
213R	3,735,374
237S	3,735,375
242	3,735,376
248P	3,735,377
251	3,735,378
258C	3,735,379
278	3,735,380
279	3,735,381
	3,735,382
323	3,735,386
324AD	3,735,384
	3,735,385
	3,735,388
324A	3,735,383
	3,735,389
324R	3,735,387
347AD	3,735,390
	3,735,392
347DA	3,735,393
347NT	3,735,394
347SY	3,735,391
365P	3,735,395
413	3,735,396

CLASS 343

5ST	3,735,397
7ED	3,735,398
7.7	3,735,399
	3,735,400
11R	3,735,401
14	3,735,402
16M	3,735,404
16R	3,735,403
17.2R	3,735,411
100ME	3,735,405
101	3,735,406
106R	3,735,407
112CA	3,735,408
113R	3,735,409
114	3,735,410
225	3,735,412
730	3,735,413
769	3,735,414

CLASS 346

33B	3,735,415
74MP	3,735,416
139C	3,735,417

CLASS 350

6	3,734,591
17	3,734,592
31	3,734,593
96B	3,734,594
97	3,734,595
140	3,734,596
160LC	3,734,597
	3,734,598
190	3,734,599
196	3,734,600

CLASS 352

157	3,734,602
169	3,734,603

CLASS 353

30	3,734,605
120	3,734,606

CLASS 355

4	3,734,607
14	3,734,604
	3,734,608
16	3,734,609
40	3,734,610
	3,734,612
41	3,734,611
47	3,734,613
67	3,734,614
76	3,734,615
89	3,734,616

CLASS 356

27	3,734,619
73	3,734,620
95	3,734,621
103	3,734,622
110	3,734,623
118	3,734,624
	3,734,625
120	3,734,626
153	3,734,627
200	3,734,628
201	3,734,629
203	3,734,630
205	3,734,631
226	3,734,632
246	3,734,601

CLASS 401

259	3,734,633

CLASS 402

56	3,734,634

CLASS 415

72	3,734,635
88	3,734,636
114	3,734,639
122R	3,734,637
141	3,734,638
213	3,734,640

CLASS 416

4	3,734,641
61	3,734,642
77	3,734,643
114	3,734,644
214	3,734,645
220	3,734,646

CLASS 417

269	3,734,647
310	3,734,648
370	3,734,649
407	3,734,650
420	3,734,651

CLASS 418

70	3,734,652
88	3,734,653
152	3,734,654

CLASS 423

71	3,734,689
83	3,734,996
290	3,734,997
406	3,734,998
450	3,734,999
613	3,735,000

CLASS 424

1	3,735,001
3	3,735,002
47	3,735,003
89	3,735,004
101	3,735,005
122	3,735,006
158	3,735,007

CLASS 425

33	3,734,655
34	3,734,656
62	3,734,657
78	3,734,658
123	3,734,660
129	3,734,661
131	3,734,662
145	3,734,659
147	3,734,663
151	3,734,664
174	3,734,665
186	3,734,666
190	3,734,667
330	3,734,668
373	3,734,669
405H	3,734,670
450	3,734,671
	3,734,673
458	3,734,674
462	3,734,672

CLASS 431

12	3,734,675
79	3,734,676
88	3,734,677
93	3,734,678
	3,734,679
132	3,734,680
242	3,734,681
324	3,734,682

CLASSIFICATION OF DESIGNS

D 4—	14	226,941
	25	226,942
D 6—	248	226,943
D 8—	131	226,944
D 9—	275	226,945
D13—	1	226,946
		226,947
		226,948
		226,949
D16—		226,950
	2	226,951
D23—	19	226,952
	146	226,953
D25—	1	226,954
D29—	19	226,955
		226,956
D34—	15	226,957
D44—	1	226,958
		226,959
		226,960
	9	226,961
		226,962
	10	226,963
		226,964
	15	226,965
D45—	4	226,966
		226,967
		226,968
	16	226,969
D48—	2	226,970
	20	226,971
		226,972
	23	226,973
D54—	12	226,974
		226,975
		226,976
		226,977
		226,978
		226,979
		226,980
		226,981
		226,982
D56—	1	226,983
		226,984
		226,985
	4	226,986
D61—	1	226,987
D71—		226,988
D74—	113	226,989
D81—	4	226,990
D83—	1	226,991
D87—		226,992
	3	226,993
D94—		226,994

CLASSIFICATION OF PLANTS

P. —	19	03,340
P. —	43	03,342
P. —	54	03,339
P. —	56	03,338
P. —	70	03,341
P. —	78	03,343

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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DESIGN PATENTS

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18 : 226,994
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26 : 226,970

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226,983

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42 : 226,984
226,985
44 : 226,967
226,972
49 : 226,953

PLANT PATENTS

6 : 03,338

03,340

03,343

8 : 03,341

39 : 03,339

53 : 03,342

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U. S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

PATENT OFFICE
Robert Gottschalk, Commissioner